94th YEAR

AMERICAN GAS JOURNAL

NOVEMBER 1943

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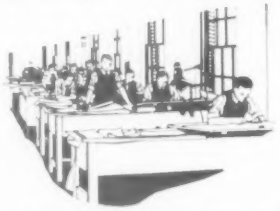

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LOS ANGELES MEMPHIS NEW YORK PITTSBURGH SAN FRANCISCO SEATTLE TULSA

NATIONAL METER DIVISION, Brooklyn, N. Y.

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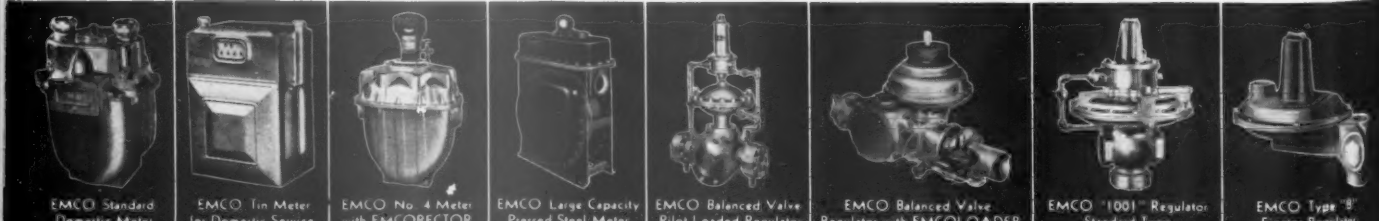

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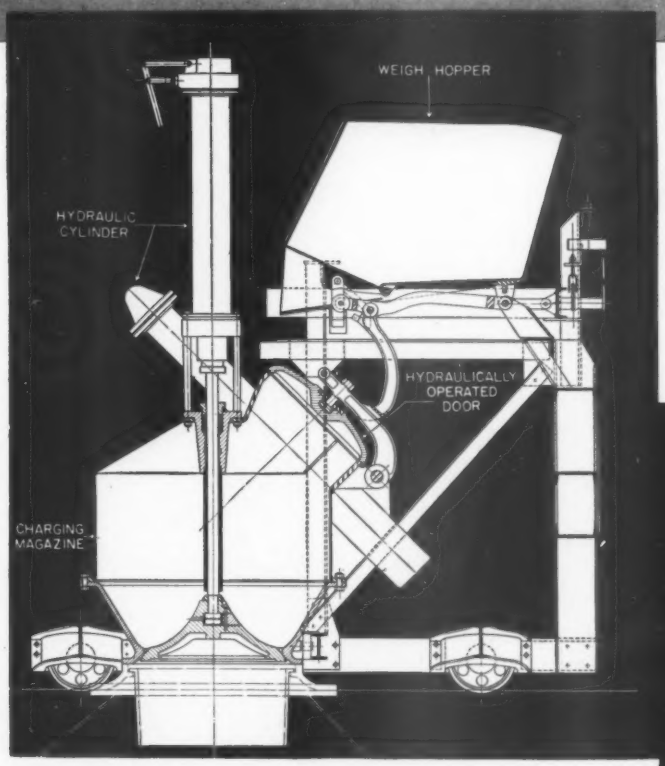

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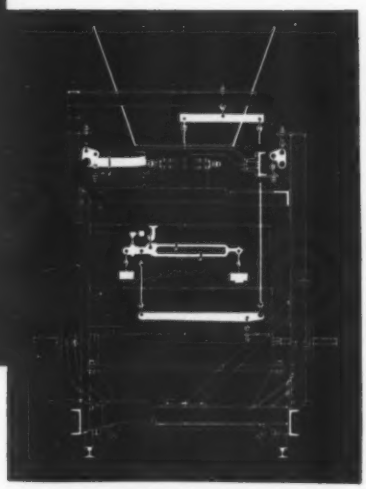

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your postwar PLANS!

"Blueprint Now" is the official slogan of the national *Committee on Water and Sewage Works Development** organized and functioning, state by state, to get postwar plans out of the "talking" stage into blueprint form—detailed plans and specifications—so that construction can start at the drop of a hat, when armistice comes.

The Cast Iron Pipe Research Association gladly contributes additional publicity to the furtherance of this program. It is of prime importance to the community and the nation.

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* *To communicate with the* Committee on Water and Sewage Works Development *address Suite 2110, 500 Fifth Ave., New York 18, N. Y.*

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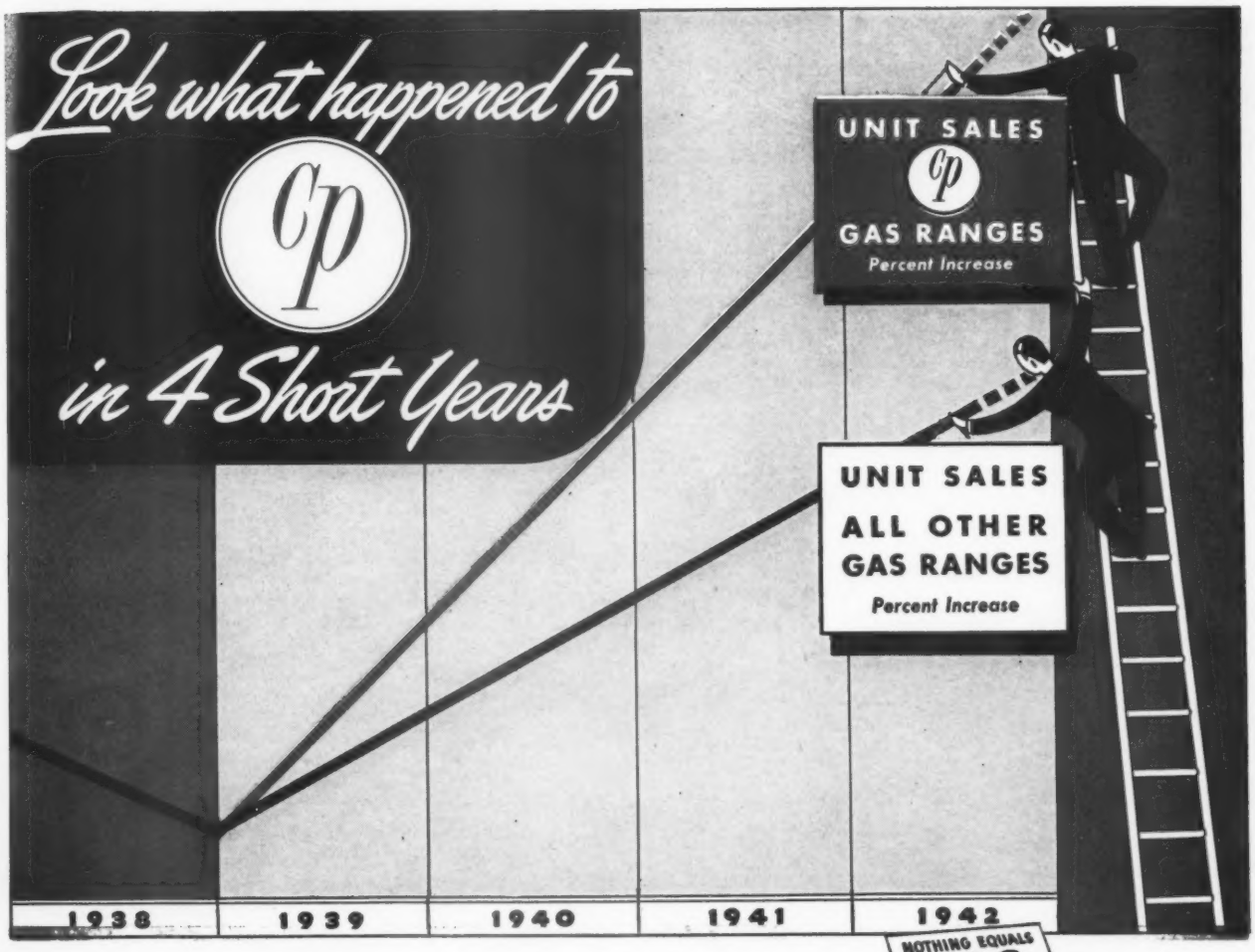
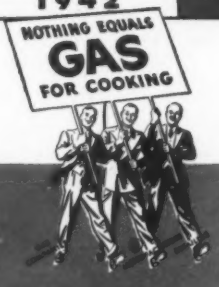


KEEP YOUR EYE ON CP IN 194X



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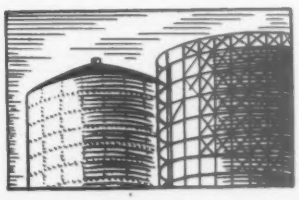
B. Behind every gun, tank, jeep and bomber stands American industry . . . greatest industrial economy of all time!



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NUMBER 5

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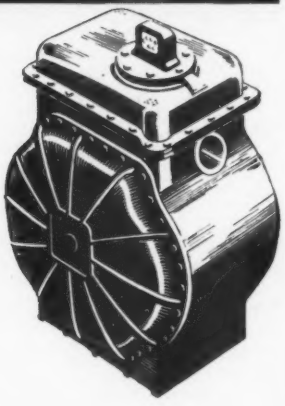


NOVEMBER
1943

AMERICAN
GAS JOURNAL

VOLUME 159
NO. 5

The 25th Annual Meeting of the American Gas Association

Celebrating the 25th Anniversary of the Formation of the Association

THE 25th Annual Convention of the American Gas Association is now history. It was held in St. Louis, Missouri October 26th, 27th and 28th.

While it was the 25th Annual Meeting, it was also the 25th anniversary of the forming of the Association. The American Gas Association came into being by a combination of the American Gas Institute and the National Commercial Gas Association, in 1918. Its first President was the late George B. Cortelyou, then President of the Consolidated Gas Company, New York, now the Consolidated Edison Company. The first Secretary - Manager was Col. Oscar Fogg. On his retirement he was succeeded by Major Alexander Forward, who is still the Managing Director.

The following is taken from an editorial in our June 8, 1918 issue.

"The New American Gas Association is an actuality. An enthusiastic gathering of gas men assembled this week in New York City and started off under more auspicious conditions perhaps than any gas association has ever started before.

"The caliber of men elected to the principal offices is an assurance that there will be no falling short from the high ideal the Association has set for itself, that human effort or intelligence can avert.

"The new association starts with a membership of the right kind. It is safe, therefore, to predict for it a brilliant success."

Under Major Forward's able guidance the Association has expanded and grown to important proportions. It keeps ahead of all developments that affect the gas industry, through numerous committees composed of leaders in their respective branches of the industry who are constantly at work helping to solve its problems.

When the war came, the Association immediately appointed a Committee on War Activities. The excellent and practical work of this committee under the chairmanship of Ernest R. Acker, Poughkeepsie, N. Y., has gained for the gas industry the wholehearted approval of official Washington for its co-operation in the war effort.

The 1450 gas men who attended the 25th Annual Convention could not help but be impressed with the reports made by the Chairmen of the various committees at the different meetings. They revealed the great amount of work accomplished during the past year by each of them. It was gratifying to note that they all had the highest praise for the Association headquarters staff for their whole-hearted cooperation.

The management, committees and the headquarters staff working together make the Association a worthy representative of our great gas industry.

NEWLY ELECTED OFFICERS AMERICAN GAS ASSOCIATION, 1943-44

Ernest R. Acker
President

J. French Robinson
Vice President

J. E. Llewellyn
Treasurer

New A. G. A. Officers for 1943-1944

President—Ernest R. Acker, president, Central Hudson Gas & Electric Corp., Poughkeepsie, N. Y.

Vice-President— J. French Robinson, president, The East Ohio Gas Company, Cleveland, Ohio.

Treasurer—J. L. Llewellyn, insurance manager, The Brooklyn Union Gas Company, Brooklyn, N. Y.

Directors—Two Year Terms

F. M. Banks, vice-president, Southern California Gas Co., Los Angeles, Calif.

Walter C. Beckjord, executive vice-president, Columbia Gas & Electric Corp., New York, N. Y.

C. M. Cohn, president, Consolidated Gas Electric Light & Power Co. of Baltimore, Baltimore, Md.

Watson E. Derwent, vice-president, Geo. D. Roper Corp., Rockford, Ill.

R. L. Fletcher, vice-president, Providence Gas Co., Providence, R. I.

D. A. Hulcy, president, Lone Star Gas Company, Dallas, Texas.

E. P. Noppel, Ebasco Services, Inc., New York, N. Y.

Bruno Rahn, president, Milwaukee Gas Light Co., Milwaukee, Wis.

Louis Ruthenburg, president, Servel Inc., Evansville, Ind.

E. J. Tucker director and general manager, Consumers Gas Company of Toronto, Toronto, Ontario.

H. Carl Wolf, president, Atlanta Gas Light Co., Atlanta, Ga.

Section Chairmen and Vice Chairmen

O. H. Ritenour C. E. Packman

Accounting Section — Chairman, O. H. Ritenour, Washington Gas Light Company, Washington, D. C.; Vice-Chairman, C. E. Packman, Middle West Service Co., Chicago, Ill.

C. V. Sorenson J. H. Warden

Residential Section—Chairman, C. V. Sorenson, Northern Indiana Public Service Co., Hammond, Ind.; Vice-Chairman, J. H. Warden, Oklahoma Natural Gas Co., Tulsa, Okla.

Charles G. Young Harry K. Wrench

Industrial and Commercial Gas Section — Chairman, Charles G. Young, Springfield Gas Light Co., Springfield, Mass.; Vice-Chairman, Harry K. Wrench, Minneapolis Gas Light Co., Minneapolis, Minn.

Malcolm Leach

Manufacturers' Section — Chairman, Malcolm Leach, Glenwood Range Co., Taunton, Mass.

★ ★ ★

R. E. Wertz R. H. Hargrove

Natural Gas Section—Chairman, R. E. Wertz, Amarillo Gas Co., Amarillo, Texas; Vice-Chairman, R. H. Hargrove, United Gas Pipe Line Co., Shreveport, La.

Chas. F. Turner R. H. Knowlton

Technical Section — Chairman, Charles F. Turner, The East Ohio Gas Co., Cleveland, Ohio; Vice-Chairman, L. E. Knowlton, Providence Gas Co., Providence, R. I.

Major Alexander Forward
Managing Director

General Sessions

Arthur F. Bridge, Chairman

Vice President and General Manager
Southern Counties Gas Company,
Los Angeles, Calif.

The first meeting started with a luncheon on the 27th. The guest speaker was Col. W. F. Rockwell, Director of Production, U. S. Maritime Commission and President of A. G. A. E. M. His message to the delegates included his belief that Congress was about to take over the making of laws to take the place of directives and executive orders, and that when peace comes the United States will continue to be the kind of country we are fighting for by the restoration of initiative and freedom from government dictation, so that every man and woman can perform in proportion to their willingness to work and plan.

Arthur F. Bridge, in his presidential address, reviewed the various activities of the A. G. A. during the past year. Continuing, he stated:

"There are several aspects of the current Federal tax situation of vital concern to our industry, upon which I should comment. I feel confident that I express the viewpoint of our industry in saying that we expect and desire to carry our equitable share of the burden of financing the war, but feel it our duty to direct the attention of the proper public authorities to provisions of the present law which we deem discriminatory and unjustly burdensome.

"The first problem affects only our natural gas companies. Under the existing tax structure they are being penalized in proportion to their increased contribution to the national fuel requirements. This appears paradoxical but is nonetheless unfortunately true. Natural gas marketed by public utilities in 1943 will show an increase of 58% over the immediate pre-war period. Most of this goes to war industries—75% of the additional sales being industrial. Since natural gas is an irreplaceable resource, it follows inevitably that the remaining life of existing reserves is correspondingly shortened. The present tax law makes no specific provision for this abnormal depletion or its resultant increase in cost of gas delivered to market. On the contrary, the indicated unit net income of the natural gas industry, after taxes for 1943, is approximately 30% less than for the prewar base period 1936-39. In order to continue furnishing gas in the ever-growing volumes required to meet demands of war industry, these companies are forced to increase sharply their expenditures for leaseholds, exploration, drilling, compressors, and pipelines.

"It is most essential, therefore, that the tax law be modified to permit partial exemption from excess profit taxes commensurate with the accelerated rate of exhausting reserves, thus enabling these companies to maintain their credit and to finance the betterments so vital in meeting our national fuel needs. A special committee, representing natural gas companies, has prepared a very able brief, and is seeking remedial legislation. The form of relief requested is recognized in the present statute and has already been accorded to other natural resource industries such as timber and mining.

"Certain other effects of the 1942 Revenue Act involve all privately owned utilities including our industry.

"One result of the ever-mounting corporate Federal taxes is to increase greatly the disparity in the tax burdens carried by consumers of privately owned vs. publicly owned. The privately owned utilities and their consumers are thus saddled with a handicap which already has reached an average of 25% of gross revenue for Federal taxes alone. Despite the manifest discrimination created by this tax situation, particularly where such utilities are engaged in competition, I fear that no relief may be expected until the need for additional national revenue overbalances resistance to taxation by advocates of the publicly owned utilities.

"Another related problem, affecting public utilities generally, is the wide variation in the incidence of the excess profits tax upon rate of return, and in certain extreme cases, the depression of earnings to the point of credit impairment. While the excess profits provisions of the Act were ostensibly devised to recapture war-created, and therefore *abnormal*, corporate profits, they have nevertheless gravely reduced the *normal* equity income of many utility companies. A recent analysis of the 1942 tax returns of 14 major gas, electric, water, and telephone utilities in California, after adjustment for non-recurring items, disclosed that the point of incidence of excess profits taxes ranged from 4.67% to 9.58% upon the depreciated historical rate base. Because of the 81% rate, this tax virtually confiscates earnings above the point of incidence.

"That the law in its present form hits public utilities harder than other industrial corporations is shown convincingly by a recent analysis in which the 1942 common stock earnings of 10 of the largest companies in 9 industries were compared with the corresponding average earnings for the period 1936-39. The study included the following industries: electric and gas utilities, railroad, steel, oil, aircraft, automobile, chemicals, metals, and motion pictures. All industries except the public utilities showed substantial gains in 1942 over the base period, while the latter group declined by 28%, and only one company of the ten had increased earnings.

"Possibly the gravest potential threat to the financial stability of public utilities and a direct consequence of mounting income taxes, is a disposition, particularly on the part of certain Federal regulatory agencies, to disallow as operating expenses such taxes above the prewar level. The principle of disallowing abnormal income taxes was first enunciated in several rate decisions during World War I, but was overruled by the U. S. Supreme Court in 1922 (Galveston Electric Co. vs. Galveston) and was thereafter repudiated by several state commissions which had initially adopted it."

He also referred to a proposed organizational change in the association. "For some time past," he said, "there has been a feeling among many of our natural gas members that their branch of the industry is inadequately recognized in our present organization. They believe that in view of the prestige and importance of the natural gas business it should not be continued as a section having administrative parity with other sections of lesser importance and functional scope.

"This viewpoint which, in my opinion, is justified, has been the cause of misunderstanding and dissatisfaction. It was therefore deemed desirable to study the present organization plan with a view to eliminating this source of disharmony,

and to that end I appointed a special committee consisting of J. French Robinson, Chairman, and Ernest Acker. That committee has just submitted its report which I shall read. The report and plan were unanimously approved by the main advisory committee of the Natural Gas Section and favorable action thereon recommended to the Executive Board. The report was unanimously approved by the Executive Board at its meeting Oct. 26th, and resolutions were adopted designed to amend the constitution and by-laws in order to carry the contemplated changes into effect.

"The plans of reorganization and the constitutional amendments will be submitted at an early date to the Association membership for ratification. It is my hope that these amendments will receive the prompt and favorable consideration of our members."

The following is the report of Messrs. Robinson and Acker.

To President Bridge:

The Committee appointed by you to consider organizational changes in the American Gas Association herewith submits to you and to the Board amendments to the Constitution providing for the nomination and election of two Vice-Presidents, one from the natural gas industry and one from the manufactured gas industry, and the setting up of a Natural Gas Department and a Manufactured Gas Department, each to be headed by a Managing Committee of which the respective Vice-President shall be Chairman; and providing that the Vice-Presidents shall be ex officio members of the Finance and Control Committee.

We further recommend that the Board declare as Association policy that the General Nominating Committee shall alternately nominate natural gas and manufactured gas Vice-Presidents for the Presidency and that Sectional Nominating Committees name natural gas and manufactured gas Chairmen alternately.

The fundamental changes involved are reflected in the chart accompanying and a part of this report.

It is the intent of these recommendations to relate the organization of the Association more directly to the present-day needs of the two main divisions of the industry, assigning to the newly created Departments under qualified executive control such activities as are specifically applicable to each Department and grouping in the Section, general committees and Laboratories the remaining activities which are jointly applicable to both Departments.

Your Committee further recommends the creation of a standing Coordinating Committee on Research to consider all of the research activities of the Association and its agencies, to recommend from time to time what research activities shall be undertaken and financed and which shall be discontinued and to report on their relative importance to the industry.

Your Committee has discussed at length the most effective arangement of General, Departmental and Sectional Committees to effectuate the purposes of the foregoing recommendations and has outlined certain suggestions for consideration by the various existing Managing Committees. We, therefore, recommend that this committee be continued for the purpose of reviewing and discussing with the Sections' appropriate committee rearrangements and of reporting thereon to the Board.

It is believed that the recommendations in this report and the adjustments that will follow will increase the usefulness of the Association to all of its members and will enlarge its opportunity to be of service to the industry.

Ernest R. Acker, chairman of the A. G. A. Committee on War Activities, reviewed the work of his committee, and Marcy L. Sperry, President, Washington Gas Light Co., Washington, D. C., read a paper titled "Gas Industry Research—Today and Tomorrow," in which he pointed out the necessity of continuous research work by the industry.

The second meeting opened Thursday morning. A. M. Beebee, chairman of the A. G. A. Post-War Planning Committee, reviewed the work of his committee, and introduced the sub-committtee chairman, C. V. Sorenson, Hammond, Ind., R. J. Rutherford, Worcester, Mass., and R. E. Ginna, Rochester, N. Y.

This committee has been doing a very valuable work and the reports of each will soon be printed by the A. G. A. and we urge every gas company get copies and study them. The information in these reports will be invaluable to every gas company executive in planning his post-war activities.

After the general luncheon, H. Carl Wolf, chairman, Committee on National Advertising, gave the delegates many logical reasons why national advertising as well as gas company advertising should be continually stepped up in volume. His paper will be printed in full in a later issue of the Journal.

The rest of the session was devoted to the presentation of papers, covering various problems that will confront the industry after peace comes. The speakers were: Hall M. Henry, "Engineering and Economic Problems Within the Industry"; Hudson W. Reed, President, Philadelphia Gas Works. "Forward Thinking on Post-War Industry Needs"; Charles R. Bellamy, Columbia Gas & Electric Corp., "Promoting

On the left. L. to R: J. D. Von Maur, Toronto, Ontario, Canada, J. V. Postles, Chairman, Technical Section Committee to Cooperate with Post War Planning Committee, Philadelphia, Pa., F. J. Pfluke, Vice Chairman Gas Production Committee, Rochester, N. Y.

On the right. L. to R: A. V. Smith, Philadelphia, Pa. (Beal Medal Winner) L. J. Willien, Head Consultant on Manufactured Gas, War Production Board, Washington, D. C., Carl D. Ulmer, Koppers Company, Pittsburgh, Pa.

Photos A. Gordon King

Post-War Employment" and Frank H. Adams, Vice-President Surface Combustion Co., "Gas Appliance Manufacturers and Promotion After the War."

Mr. Adams summed up his remarks as follows:

"I am not so concerned today with the long range after "V" Day problems of manufacturing and distribution as I am with our ability to recognize the periods for which we must plan and the early completion of 'plans of action' for these periods as they arrive. I'm more concerned now with what action we as an industry will take when Hitler is beaten than I am in what we will be doing six months after the war ends with Japan. I am more interested in our conception of the basic problems present today and with which we must deal today and in the various periods of transition from war to peace than I am in a modified, polished up, pre-war version of distribution, or even the most complete, well conceived plan that can function successfully only a year after final peace is won.

"It appears to me that there are two simple and self-evident truths that we as an industry must recognize now, which justify the immediate formulation of clear cut, effective action.

First: That millions of people fear peace: Men and women in our armed forces, anxious as they are to finish the war and live in peace, fear it; millions employed in various government bureaus and war production plants fear peace; small business, big business, government, politicians, captains of industry—yes, even you and I fear peace, because we are not ready for a practical, durable peace.

Second: That Global war will not end on one day: Eventually there will be a day which we will call "V" Day or "D" Day, but this in all probability will be preceded by an end of European hostilities, reduction in the demand for war goods, a partial transition to peace time production, certain limitations lifted, and some consumer durable goods flowing into the homes of your customers."

Natural Gas Section

The meeting of the Natural Gas Section was held Tuesday morning. After a brief address by Major Alexander Forward, Managing Director of the American Gas Association, Mr. Bay addressed the meeting. After reviewing the activities of the past year, he said:

"Another matter presently confronting the industry stems from the effect of a recent Federal tax legislation. It is hard to believe that Congress, in adopting the present Corporation Income Tax measure had in mind that it would result in the present anomalous situation whereby many pipe line and producing companies who, in spite of the fact that they are marketing greatly increased volumes of natural gas, find themselves with reduced earnings and a growing construction requirement arising from these heavy withdrawals of gas. Another somewhat common result is that little or no opportunity is left to conserve cash from income as a cushion against post-war needs. While natural gas men do not

Burt R. Bay, Chairman
President Northern Natural Gas Company, Omaha, Neb.

ask or expect special favor in these times, it is generally recognized that if the industry continues to make the maximum possible contribution to the war effort, there is need for correcting existing tax injustices before they impair the ability of this natural resource industry to do just that.

"So much for past performances and the present trend of matters relating to this industry—world events of recent months have been of such nature as to give rise to thoughts of what is to follow the end of this war. It is plain to be seen that the popular conception has reversed the old truism so that it now reads, 'In time of war prepare for peace.' It is a hopeful outlook—one that offers opportunity for truly constructive thinking and planning. Whether or not this feeling is justified or is induced by over-optimism about the trend of the war or whether or not the road ahead is smooth or still rough and fraught with danger, I do not pretend to know, but I do have the fixed conviction that this is no time to relax our efforts and our post-war planning should not be permitted to interfere with our determination to continue to make the greatest possible contribution to the war program.

"While indulging in thoughts of what is ahead for natural gas, mention should also be made of the war time evolution of the use of natural gas hydrocarbons in industries that are clearly separate and apart from the production, transmission and distribution of natural gas for fuel uses. Tremendous advances are being made in research and while much of the progress is a result of war necessity, new vistas are being opened disclosing new manufacturing processes which will outlast the war period. Skilled research chemists have shown that it is possible to rearrange the molecular structure of these hydro-carbons in a multitude of new ways and bring forth dozens of end products that include a variety of solvents, plastics, explosives, synthetic rubber and aviation gasoline. It is not improbable that companies in this industry will find it to their advantage after the war to further expand and broaden liquid hydrocarbon manufacturing plants and processes because of the new uses and rapidly growing market for such products."

Ralph K. Davies, Deputy Petroleum Administrator, P.A.W., Washington, D. C., outlined the close cooperation between the oil and natural gas industries. He pointed out how they survey and develop new oil and gas wells, and reinforce each other in many ways.

Allen W. Lundstrum, Deputy Director Natural Gas Division, Office of War Utilities, stated that L31 had been superseded by a new utility order U7, effective October 26th. He explained some of the modified clauses in the new order as compared with L31. New order U7 appears elsewhere in this issue of the Journal.

Technical Section

Chairman, H. L. Gaidry,

New Orleans Public Service Co.
New Orleans, La.

The Technical Section meetings started Tuesday afternoon. The first paper on "Laboratory Cracking Tests on Gas Enrichment Oil at Normal and Short Time of Contact," was presented by Leon J. Willien, Consultant on Manufactured Gas, WPB, Washington, D. C.

The purpose of the tests was to determine, if possible, whether gas enriching oil can be more completely gasified by cracking at higher temperatures and shorter time of contact than is used with present normal carbureted blue gas operation. If more complete gasification can be obtained it should result in an appreciable reduction in the amount of oil required to produce carbureted blue gas of a given heating value.

C. H. Riess and Cornel Wohlberg, Institute of Gas Technology, Chicago, presented a Progress Report on "Methods of Possible Utility for Determining Organic Sulfur Components in Gas."

The session on Wednesday, T. L. Robey, Chairman, opened with a report of the Chemical Committee.

A symposium on post-war planning, with Charles F. Turner, Vice Chairman, presiding, was participated in by J. V. Postles, The Philadelphia Gas Works; A. M. Beebee, Rochester Gas & Electric Co. and Hall M. Henry, Cambridge, Mass., followed by a symposium on "Distribution Studies," participated in by H. B. Anderson, Chairman, J. H. Collins, Chairman on "Tin and Solder," "Pipe Coating and Corrosion Research," R. F. Hadley, Chairman.

E. Holley Poe, Director Natural Gas Division, PAW, read a paper titled "Chemical Horizons in the Manufactured Gas Industry." He said:

"The American manufactured gas industry has written its name in the Chemical Hall of Fame through the development of the water-gas and carbonization processes, with their fostering of better living conditions. On the darker side of the picture, chemical developments must bear their share of the responsibility in two World Wars. A prerequisite to the march of the German army in 1914 was the perfection by Haber of the process in which hydrogen from water-gas reaction could be synthesized with the limitless quantities of nitrogen available in the air to form ammonia, which, together with the products of coal carbonization, provided essential explosives and other war products.

"You of the manufactured gas industry are rich in experience. With the opportunities which lie ahead, even greater success can be certified should the necessary emphasis be placed upon chemical operations. The gas plant stands revealed as a chemical plant, but in the past the majority of companies have regarded the chemist as merely a Btu. recorder. The gas plant operates on basic chemical fundamentals and, until you give the green light to the chemical engineer and research worker, your industry cannot hope to attain its rightful position in the world of tomorrow."

J. B. Klumpp, Philadelphia, Pa., First Chairman of the Technical Section of American Gas Association in 1918.

Industrial and Commercial Gas Section

B. H. Gardner, Chairman
East Ohio Fuel Co., Columbus, O.

This section's meeting opened with a luncheon on Tuesday. Ben H. Gardner, Chairman, introduced Paul R. Taylor, Director, Natural Gas Division, Office of War Utilities, WPB, Washington, D. C., as the guest speaker.

The regular session started at once with Ben H. Gardner in the chair and the first paper on the program was presented by Frederic O. Hess, President, the Selas Company, Philadelphia, Pa. The subject was "The Revolution in Industrial Heating."

On the left, L to R: C. F. Turner, Vice Chairman, Technical Section, Cleveland, Ohio, S. P. Cobb, New York, N. Y., H. L. Gaidry, Chairman, Technical Section, New Orleans, La. On the right, C.D. Robinson, Omaha, Nebraska.

Photos A. Gordon King

Mr. Hess referred to many new heat processes that have been developed where gas was doing a better and more economical job than any other fuel, and showed a number of slides illustrating the various machines and processes.

The following committee reports were presented: Metal Treating and Melting, John P. Brosius, Equitable Gas Co., Pittsburgh, Pa., Chairman; Industrial and Commercial Space Heating, Henry O. Loebell, New York, Chairman; National Advertising, J. P. Leinroth, Public Service Electric & Gas Co., Newark, N. J., Chairman; and Food Service Equipment Committee, Roy E. Wright, New England Gas & Electric System, Cambridge, Mass., Chairman. The Food Service Equipment Committee report states that:

"Outside of gas equipment used directly in high speed war production work, food service equipment has done the most outstanding wartime job of any gas appliance. With many more people eating out, with war workers being fed at all hours of the day and night, with new, much inexperienced help in the handling of appliances, and with repair parts hard to get, the job that gas commercial cooking and baking appliances has done during the war is outstanding. However, equipment is wearing out faster than normal, and much of it must be replaced after the war—some sooner. The war-time job being done by gas equipment, despite the scarcity of new equipment, is appreciated by operators of food service establishments and it is a thing that our industry can capitalize on to a large extent in the post-war sales period. Our task will be to make sure worn out equipment is replaced with new gas equipment instead of some competitive fuel equipment."

Referring to dealer cooperation, the report states that "The individual dealer's attitude is favorable or unfavorable to gas and gas equipment depending largely on the cooperation or lack of cooperation he gets from the local gas company and the equipment manufacturers.

"It must be borne in mind that food service equipment dealers handle numerous items and that gas equipment therefore, in many cases, is only a small part of their business. Because of this general condition, it is the responsibility of the gas company to sell its fuel in its territory and to cooperate with the dealer to make sure that the right appliances, and proper installations, are made on customers premises. Experience has definitely shown that better results for all are attained through close cooperation by all."

To properly prepare for intelligent and effective post war sales work, the committee urges gas companies to make a survey of both users and potential users of gas cooking equipment in their respective communities so as to have accurate and complete knowledge of the business of customers and prospects, and their attitude toward gas appliances and equipment.

The report further says:

"After the basic data concerning customers and potential customers has been analyzed, the gas company should develop a Ready-to-Go Plan of Action for itself as well as for cooperating with its manufacturers and its dealer-cooperators. Any Plan of Action should reflect both local factors and general factors. The attitude of food service equipment customers is affected by both factors, and resulting sales are affected by both."

The meeting closed with a round table discussion, with Franklin T. Rainey, Ohio Fuel Gas Co., Columbus, Ohio, presiding.

Residential Section

Chairman, B. A. Seiple,

V. Pres. Jersey Central Power & Light Co., Asbury Park, N. J.

This section held but one meeting on Oct. 27th. In opening the meeting, Mr. Seiple reviewed the work of the Residential Section and committees. In summing up he said:

"To bring about a full and complete understanding, we must first erase the old concept that utilities merchandise only for load building and without regard to profit. We must, instead, emphasize the need for merchandising on a profitable basis, since when this is the basis for utility sales activities, then, and only then, is sincere dealer cooperation possible. Too frequently in the past have some companies gone before dealers with what were termed Dealer Cooperative Plans, but which were in effect either Dealer Competitive Plans or Dealer Subsidy Plans. When the plan was a Dealer Competitive Plan, it created dissatisfaction among the dealers and caused them to complain that they could not stay in business so long as a utility merchandised. When the plan was of the Dealer Subsidy type, it met ready acceptance on the part of the dealers when introduced, but, in most cases, destroyed the initiative and value of the dealer.

B. A. Seiple

"We must provide the leadership in Post-War Sales activities that will assure our customers the best equipment possible so that gas, the fuel, will attain Certified Performance in every possible way. We must be very sure today that our customers are judging gas, the fuel, by the highest standards of performance and not making comparisons between gas equipment of the 1930 era and competitive equipment of the 1940 era."

F. X. Mettenet, Vice-President, The Peoples Gas Light & Coke Co., Chicago, Ill., talked on the subject "Meeting War-Time Sales Restrictions With an Eye to the Future." He outlined a survey now nearing completion of all their domestic customers to find out what they would like in the gas range of the future. The survey covers such questions as to whether they favor the table top range, a medium high oven range or a high oven range. It also covered the preference of the customers in the matter of the width of the range, and whether square or rounded corners were desirable.

So far in the survey, 47 per cent preferred the table top model, 37 per cent a medium high oven and 16 per cent a high oven, 85 per cent want rounded corners.

He also outlined their dealer cooperation plan. He stated that his company fixed the retail price on every model, and the dealer set the same retail price. The retail price was set at a figure that would give the dealer a fair margin of profit, and if the prospective customer went shopping, she found every model priced exactly alike, and this included the company display room. All sales plans and policies of the company are placed before the dealers, plumbers and contractors so that they are fully informed at once of any changes.

"Who Will Sell What?" was the title of a paper presented by Frank

C. Smith, President Houston Natural Gas Co., Houston, Texas, and is printed elsewhere in this issue of the JOURNAL.

"How Will We Sell Gas Tomorrow?" was the subject covered in a paper prepared by Dean H. Mitchell, President, Northern Indiana Public Service Co., Hammond, Ind., and will be printed in full in a near issue of the JOURNAL.

Louis Ruthenburg, President Servel, Inc., Evansville, Ind., discussed the subject "Who Accepts Responsibility for Industry Progress?"

"Responsibilities in our joint enterprise that should be assumed by gas appliance manufacturers," Mr. Ruthenburg said, "can be defined with a fair degree of accuracy and general agreement, but at the outset we should understand that appliance manufacturers cannot discharge these responsibilities in the absence of general understanding and cooperation on the part of the gas utilities.

"Too frequently in his contacts with gas utilities the manufacturer meets short-sightedness attitudes of defeatism and opportunism. I have in mind the type of operator who moans because he feels that he cannot promote the sale of gas refrigerators successfully in the face of cheap electric refrigerator competition. Shortly thereafter this same operator again becomes despondent because gas stoves are being replaced by electric ranges. Such utility men wholly disregard the fact that good salesmen are getting high prices and fat commissions for gas refrigerators in other territories where conditions are closely parallel because they sell the outstanding advantages of gas refrigeration over electric refrigeration. Such gas men are impervious to the fact that the men who are selling electric ranges under their noses are selling them at prices much higher than gas stove prices and despite operating costs two or three times as high, simply because they are selling such intangible and somewhat theoretical virtues as cleanliness, coolness and safety.

"I have in mind also the type of operator who rolls competitive manufacturers of gas appliances over the barrel until he has obtained a price so low that the manufacturer cannot appropriate money for research, decent manufacturing facilities or for the promotion and advertising of his product.

"Utility managements with vision and courage will consistently stimulate the manufacturer to improve his product in quality, function and appearance. Such managements will cooperate with the manufacturer to develop constructive sales promotion and advertising. They will be more concerned with the ability of the appliance to create and maintain the consumer's lasting approval than with the price the consumer pays for the appliance. In the last analysis utility managements are the major factor in determining the types, quality, performance characteristics and prices of appliances sold in their territories, and I submit that these matters are of such vital importance to utility managements that they should have the careful, continuous consideration of top flight administration."

Accounting Section

The Accounting Section held meetings on the 26th and 27th.

The Customer Accounting Activities Group meeting was held on the 26th. The first part of the program was devoted to the presentation of two papers, on "Training Programs for Supervisors" by J. J. Natale, Philadelphia Electric Co., Philadelphia, Pa., and the second by W. McFeely, Public Service Electric & Gas Co., Newark, N. J. The general nature of the programs used by these two companies was outlined.

The remainder of the meeting was devoted to general discussion of current and post-war topics, such as manpower problems, present emergency practices and others.

The General Accounting Activities Group held several group meetings in the forenoon and the Customer Accounting Activities Group held group meetings in the afternoon. The Customer Relations meeting was marked by lively discussion of the effect of wartime conditions on customer service and relations. The question of customer attitudes on the continuance of emergency practices was also discussed.

Home Service Breakfast

Chairman, Jeannette Campbell, Minneapolis Gas Light Co.

The Home Service breakfast held on Wednesday morning was well attended. Brief addresses were made by A. F. Bridge, President, A. G. A., Alexander Forward, Managing Director, and B. A. Seiple, Chairman, Residential Section.

"Fashions-in-Rations" was discussed by Billie Burke in person, followed by a series of short talks on "Food Preservation."

On the left. L. to R: E. W. Guernsey, Chairman, Organic Sulphur Subcommittee, Baltimore, Md., R. Van Vliet, Staten Island, N. Y. (Chairman Water Gas Committee).
On the right. L. to R: L. M. Harris, Paterson, N. J., H. D. Lehman, Chairman, Gas Conditioning Committee, Technical Section, Philadelphia, Pa., Dr. A. W. Gauger, Pennsylvania State College, State College, Pa., (Chairman Subcommittee on Stresses and Strains) T. L. Robey, Chairman, Chemical Committee, Technical Section, Washington, D. C.

Photos A. Gordon King

Home Service

When Home Service departments in gas companies were inaugurated several years ago, there were many discussions at meetings of gas men as to their value. It did not take long, after the departments became active, to remove all doubts as to their value to the company and their usefulness to the community. These contacts in the home during peacetime increased in importance each year.

Since the declaration of war, the valuable work of the Home Service departments has become invaluable. Their cooperation in the nutrition program of the government has been acknowledged as outstanding. In this day of food rationing, their assistance to housewives in the selection and preparation of nutritious meals is really appreciated. One gas company official stated that as many as 2500 telephone calls in one day had come to the Home Service department in his company from housewives who wanted help to solve some meal cooking or planning difficulty, and the department personnel was always ready with the answers.

It must have been gratifying to the Home Service directors attending the convention to hear so many speakers in the various meetings express the appreciation of the gas industry for their efforts.

AWARDS

The Beal Medal

Highest technical recognition in the gas industry was conferred on A. V. Smith, consulting engineer of Philadelphia, Pa., on October 28 when he was awarded the Beal Medal during the Annual Meeting of the American Gas Association in St. Louis, Mo. Mr. Smith received the medal for contributing the best technical paper to meetings of the Association throughout the year.

A. V. Smith

Presentation of the award was made by Ernest R. Acker, president, Central Hudson Gas & Electric Corp., Poughkeepsie, N. Y., representing the family of the late W. R. Beal, who established the award in 1897. It consists of a bronze medal and substantial cash payment.

Mr. Smith was honored for a paper on "Cathodic Protection Interference" which he presented at the Distribution Conference in Cincinnati, Ohio, April 29-30, 1943. In this paper, Mr. Smith made a comprehensive and valuable contribution to the problems of cathodic interference. He described and illustrated the effect of anodes and gave actual data for tests made to show the effects of cathodic interference.

In his paper Mr. Smith states: "Cathodic protection cannot be installed on any one structure in a city network if a remote anode is to be used, for such an installation will produce cathodic interference. Outside of the city networks where the separation between the pipe lines is such that a remote anode may be used with a minimum effect on the foreign structure, cathodic interference may be eliminated by a properly designed residual bond."

The Beal Medal Award Committee was composed of D. H. Hartson, Equitable Gas Co., Pittsburgh, Pa., chairman; Harold L. Gaidry, New Orleans Public Service, Inc., New Orleans, La., and Charles F. Turner, The East Ohio Gas Co., Cleveland, Ohio.

Charles A. Munroe Award

Ernest R. Acker, president of the Central Hudson Gas & Electric Corp., Poughkeepsie, N. Y., was doubly honored by the gas industry at the Annual Meeting of the American Gas Association in St. Louis, Mo., October 26-28. He was elected president of the Association and received the Charles A. Munroe Award for having made the most outstanding recent contribution toward the advancement of the gas industry. This is the first time in the history of the national assocation that any individual has received both honors in the same year.

Highest recognition within the gift of the Association, the coveted Charles A. Munroe Award consists of a substantial financial acknowledgment and engrossed certificate. The first such award was made in 1929.

Presentation of the award was made by Arthur F. Bridge, retiring president of the American Gas Association and vice-president and general manager of the Southern Counties Gas Company, Los Angeles, Calif. In presenting the award, Mr. Bridge said:

"Mr. Acker has unselfishly and unstintingly served the gas industry and the American Gas Association as a Director, Chairman and member of many important committees, as its Treasurer for several years, and, during the past year, as Vice-President and Chairman of the all-important Committee on War Activities. In the latter capacity he has sacrificed personal comfort, time and energy in his efforts to look after the interests of the gas industry to the end that we might give our best toward winning the war.

"It is indeed a pleasure and a privilege for me to present the Charles A. Munroe Award to Mr. Acker. A pleasure because I count the recipient as a friend. A privilege for he receives the award, at least in part, in recognition of accomplishments which contributed in no small measure to whatever success my administration has achieved."

The 1943 award was made by a committee composed of Frank H. Lerch, Jr., President, Gas Companies, Inc., New York, N. Y., Chairman; George S. Hawley, President, Bridgeport Gas Light Co., Bridgeport, Conn.; and James F. Pollard, President, Seattle Gas Co., Seattle, Wash. The recommendation was approved by the Association's Executive Board.

Merit Awards

Representatives of 7 units of gas companies throughout the country received Merit Awards October 28 from the American Gas Association for achievements in accumulating one million or more man-hours without a disabling injury accident. The awards, which were recommended by the Accident Prevention Committee and approved by the Executive Board, were presented by President Arthur F. Bridge at a general industry luncheon in the Jefferson Hotel, St. Louis, Mo., during the Association's annual meeting.

The following companies received this outstanding recognition for their safe operation records:

The Consolidated Gas Electric Light and Power Co. of Baltimore, Baltimore, Md., Gas Division, worked 1,085,832 man-hours with an average of 1,371 employees from April 6, 1943 to July 31, 1943 without a disabling injury accident.

Equitable Gas Company, Pittsburgh, Pa., Meter Shop, worked 1,429,817 man-hours with an average of 38 employees from March 19, 1926 to August 31, 1943 without a disabling injury accident.

The Ohio Fuel Gas Company, Columbus, Ohio, Pipe Lines Division, Northeastern, worked 1,141,842 man-hours with an average of 44 employees from October 1, 1935 to January 1, 1943 without a disabling injury accident.

Michigan Consolidated Gas Company, Grand Rapids, Michigan, Muskegon District, worked 1,090,612½ man-hours with an average of 96.7 employees from November 5, 1938 to May 31, 1943 without a disabling injury accident.

San Diego Gas & Electric Company, San Diego, California, Gas Meter Division, worked 1,034,728 man-hours with an average of 50 employees from February 16, 1934 to July 31, 1943 without a disabling injury accident.

The Brooklyn Union Gas Company, Brooklyn, N. Y., Customer Billing Division, Commercial Dept., worked 1,098,139 man-hours with an average of 76 employees from January 1, 1936 to July 31, 1943 without a disabling injury accident. The Customers Service Division of Brooklyn Union also received an award for working 2,225,374 man-hours with an average of 89 employees for 13 years, 11 months, 22 days from August 9, 1929 to July 31, 1943 without a disabling injury accident.

Meritorious Service Award

Bravery and service far beyond the line of duty were recognized at the Annual Meeting of the American Gas Association in St. Louis, Mo., October 28, when Raymond Marshall, service man for The Gas Service Company, Neosho, Mo., was awarded the American Gas Association Meritorious Service Award for having performed the most outstanding meritorious act in the gas industry during the past year. Presentation of the award was made by the Association's president, Arthur F. Bridge, vice-president and general manager, Southern Counties Gas Co., Los Angeles, Calif.

Mr. Marshall was so singularly honored for risking his life in coping with a serious situation which threatened gas service to Neosho and a large Army camp nearby. On Tuesday, May 18, 1943, Shoal Creek, ordinarily small enough to walk across, due to excessive rainfall,

Raymond Marshall

turned into a raging torrent a half mile wide and washed out a four-inch lateral pipe line. Gas service to the city of Neosho and Camp Crowder was in imminent danger of complete shutdown unless the gate valve was closed.

Against the advice of others, Mr. Marshall obtained a rowboat and rowed after dark across the dangerous current of the creek. He was carried downstream by the forec of the current, missing his mark several times, and being obliged to row through the tops of tall trees lining the opposite bank. Finally, he reached the valve and, while virtually exhausted and standing in water up to his neck, made the shut-off.

The supervisor of gas properties in that area stated: "This was not Mr. Marshall's job, but he showed a remarkable spirit of willingness to take care of any emergency connected with our business. There was great personal risk involved and I doubt if I would have allowed him to take the chance had I known of it."

The American Gas Association Meritorious Service Award is awarded by the Executive Board upon recommendation of the Accident Prevention Committee. It consists of a substantial financial acknowledgment and certificate. It was made possible by the generosity of the late Walter R. Addicks, senior vice-president of the Consolidated Gas Company of New York (now Consolidated Edison Co. of New York, Inc.)

Mr. Marshall has been employed as service man for The Gas Service Company at Neosho since 1937, having previously done construction work for the company in 1929. In the interim and for two years prior to 1929, he was employed in the Street and Water Department of Monett, Mo.

McCall's Magazine Awards

Winners of the 1943 McCall's Magazine Awards for outstanding contribution to the advancement of better living in the home, through the promotion of gas appliances and equipment, sponsored by McCall's Magazine and administered through the American Gas Association, were announced at the meeting.

Miss Flora G. Dowler, Home Service Director of the Manufacturers Light and Heat Company, Pittsburgh, Pa., was awarded the first prize of $100 in War Bonds and stamps plus an engraved plaque. Second prize of $50 in War Bonds and stamps and a framed illuminated parchment went to Miss Joie Kammer, Home Service Director of the New Orleans Public Service, Inc., New Orleans, La. Third prize of $25 in War Bonds and stamps and a framed illuminated parchment was won by Miss Florence Matheny, Home Service Director of Southern Counties Gas Company, El Monte, California.

Directors of home service departments of gas utility companies here and in Canada were invited to compete. Awards were made on papers of 2,000 words or less submitted by entrants covering the aims of the home service department, the training of personnel and salespeople, community activities engaged in, and increase in scope of home service

Flora G. Dowler

Joie Kammer

Florence Matheny

activities, particularly in relation to the war.

Judges for the McCall Magazine Awards were R. E. Williams, New Business Manager of the Binghamton Gas Works, Binghamton, N. Y.; R. B. Denhardt, District Manager, Central Hudson Gas & Electric Corp., Newburgh, N. Y.; R. A. Malony, Sales Manager, Bridgeport Gas Light Company, Bridgeport, Conn.; W. D. Williams, Assistant General Appliance Representative, Public Service Electric and Gas Co., Newark, N. J., and R. A. Gordon, Sales Manager, Washington Gas Light Company, Washington, D. C.

The Gild of Ancient Supplers Elects Officers and Holds Wassail

The Gild held their annual session and biennial election of officers and aldermen on the morning of the 27th.

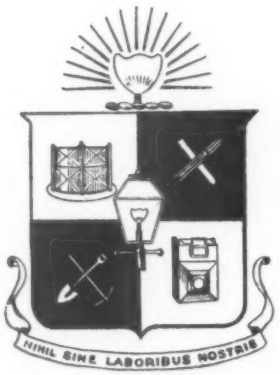
John Van Norden, Chairman of the Nominating Committee, presented as the recommendation of the Nominating Committee that the present officers and aldermen be re-elected for a second term.

This recommendation was accepted and the following officers and aldermen were re-elected: Mayor, C. Edwin Bartlett; Senior Warden, Joseph A. Mulcare; Keeper of the Treasure, Glenn H. Niles; Clerk, A. E. Lindquist; Aldermen: E. Carl Sorby, Frank C. Packer and J. A. Messenger.

Mayor Bartlett issued a welcome to the following new members: William T. Bentley, Taylor G. Nelson, Arthur E. Morton, F. H. Boezinger, John F. Monney, Francis K. Toney, E. T. Howard, A. H. Sutton and John Clancy, and announced that Gild membership had now reached the high point of 179.

The members of the Gild and their guests, numbering about 300, gathered in the Crystal Room at 5 p. m., Oct. 27th, to wassail and gossip about this and that. Mayor Bartlett was kept busy moving hither and yon to greet his subjects and friends.

In the Army, emblems on the sleeve indicate the service and rank of the soldiers and officers. The Gild



had printed the rank of the member on his white cap, and also the varied patterns of the half sleeves worn on the left arm. Just why the half sleeve on the left arm was not explained, but your reporter suspects that as the right hand was used to hold the plate of fine sandwiches and tid bits artistically displayed for the individual choice, they therefore had to use the left hand in reaching over the mahogany for ginger ale, mixes, etc., the half sleeve served as a protection to the shirt cuffs. This was thoughtful, for the laundry situation is very bad at present.

This meeting was one of the highlights of the convention and the committee in charge can put another mark on the credit side of the ledger for a job well done.

A. G. A. E. M. Report of Election of Officers and Chairmen

The Association of Gas Appliances and Equipment Manufacturers held a general meeting in St. Louis on October 25 as well as several group meetings.

The officers of the Association previously elected for the year 1943-1944 were installed. They are:

President—W. F. Rockwell, President, Pittsburgh Equitable Meter Co., Pittsburgh, Pa.

First Vice Pres.—Lyle C. Harvey, President, The Bryant Heater Co., Cleveland, Ohio.

Second Vice Pres. — D. P. O'Keefe, President, O'Keefe & Merritt Co., Los Angeles, Calif.

Treasurer — John Van Norden, Secy. & Mgr. Sales Promotion, American Meter Co., New York.

Past President—W. E. Derwent, Vice Pres., George D. Roper Corp., Rockford, Ill.

Secretary and Managing Director—H. Leigh Whitelaw, A.G.A.E.M., New York, N. Y.

Chairmen of the various groups were elected, and are as follows:

Chairman, Advisory Council — Frank H. Adams, Vice Pres., Surface Combustion Div., Toledo, Ohio.

Chairman, General Policy Committee—W. T. Rasch, President, Security Mfg. Co., Kansas City, Missouri.

Chairman, House Heating & Air Conditioning Equipment Division—A. A. Marks, Manager, Richmond Radiator Co., Uniontown, Pa.

Chairman, Gas Meter & Regulator Division—L. A. Dixon, Pittsburgh Equitable Meter Co., Pittsburgh, Pa.

Chairman, Gas Water Heater Division—J. R. Lavelle, Sales Manager, John Wood Mfg. Co., Conshohocken, Pa.

Chairman, Domestic Gas Range Division—F. J. Hoenigmann, Vice Pres., Cribben & Sexton Co., Chicago, Ill.

Chairman, CP Sales Management Committee, Domestic Gas Range Division—Lloyd C. Ginn, American Stove Company, Cleveland, Ohio.

Chairman, Industrial Gas Equipment Division—R. L. O'Brien, President, Detroit Brass & Malleable Works, Detroit, Mich.

Chairman, Hotel, Restaurant & Commercial Gas Equipment Division—W. Frank Roberts, President, Standard Gas Equipment Corp., Baltimore, Md.

Chairman, Direct Heating Equipment Division—L. F. Ryall, General Sales Mgr., General Gas Light Co., Kalamazoo, Mich.

Chairman, Thermostatic Control & Accessories Division—H. T. Ryan, Vice Pres., Robertshaw Thermostat Co., Youngwood, Pa.

Chairman, Manufacturers Section P. C. G. A.—A. H. Sutton, Pres., Mission Water Heater Co., Los Angeles, Calif.; Alternate, F. C. Packer, Payne Furnace & Supply Co., Beverly Hills, Calif.

Vice Chairman, Manufacturers Section P. C. G. A.—E. T. Howard, Gen. Sales Mgr., General Controls Co., Glendale, Calif.; Alternate, Henry Honer, President, Western Stove Co., Culver City, Calif.

Chairman, Gas Refrigerator Division—Louis Ruthenburg, President, Servel Inc., Evansville, Ind.

a HOT SEAT for HIROHITO?

WELL, not exactly—although we hope it will contribute indirectly to "that end"! ★ All we can say now is that the device illustrated is highly valued by the U. S. Army, and is one of many war products PAYNE is making for Uncle Sam. ★ In fact, our facilities are devoted entirely to supplying the armed forces; and we know you would have it that way. ★ But after the war, count on PAYNE Furnaces, as in the past, for *years-ahead design and years-on-end performance.*

PAYNEHEAT

NEARLY 30 YEARS OF LEADERSHIP

Payne FURNACE & SUPPLY CO., INC., BEVERLY HILLS, CALIFORNIA

Who Will Sell What?

By
Frank C. Smith,
President, Houston Natural Gas Corporation,
Houston, Texas

Frank C. Smith

TODAY appliance manufacturers in the gas industry and every other industry are told what they can make. Utility companies and gas appliance dealers are told what they can sell. Customers are told what they can buy and, generally speaking, each of us is told what he can do or, perhaps more to the point, what he cannot do.

Government control of every industry, every business, every home, every individual and every dollar provides the foundation upon which our country's program of all-out war has been built. Alarming and unacceptable as the aspects of this situation to the majority of us would be in time of peace, it is a condition which we must accept currently as the most direct road to victory.

But while it is our patriotic obligation to accept the war effort as it is being conducted and do our dead level best as individuals and companies in contributing to its effectiveness, we have an equally important obligation beginning right now: preparation for the day when victory is accomplished, peace is restored and Johnny comes marching home. The threat of excessive government control and the stifling of private enterprise will become very real Frankensteins at that time unless our pre-post-war thinking and actions have qualified us to cope with the situation. We of the gas industry must be ready to accept the challenge of employment for our returning service men, of keener competition than we have previously known, of new capital requirements, of new corporate tax renditions and assessments, of a vast and complex building program to meet housing deficiencies, of population shifts that may or may not work to our advantage, of inventory replacements and a hundred and one other contingencies.

Not the least of our problems will be the creation of a merchandising organization capable, among other things, of withstanding the flood of pent-up purchasing power which will be unleashed upon our country to the tune of some thirty to fifty billion dollars, a sum several times as great as the total of all consumer durable goods purchased in 1941. Nor will the least of our problems be the assurance of having ready and available for sale to this money-burdened public, consumer goods, through which our own product—gas—is sold, of such quality, style, efficiency and appeal that they will have their fair share of the market.

Thus, as we begin thinking in terms of sane and profitable merchandising for the future, one of the very first questions to arise will be that which is the subject for this talk: "Who Will Sell What?"

Post-War Markets

It would be inexcusable in a discussion of post-war markets to omit reference to Frank H. Adams' excellent paper on post-war planning, presented at our Cincinnati meeting last May, and to the first report of Mr. C. V. Sorenson's Sub-Committee on post-war purchasing power and potential markets, recently issued. These are both factual studies and the latter is also a statistical study. Both are of the highest order and, together with other studies and statements by others in this industry, are informing and illuminating to us who seek to learn what the future holds in this field.

It doesn't take a crystal gazer to predict that there will be a tremendous, unprecedented demand for new household appliances following the war. If there are dissenters to this opinion, I might refer them to the experience of the Southern California Gas Company last June. Many of you will recall that, when that company advertised sixty Servel gas refrigerators for sale out of a small quota recently unfrozen, and announced that they would be sold on a "first-come-first-served" basis, several hundred men and women responded by standing in line all night, waiting for the sales office to open its doors the following morning.

This all-night vigil, which certainly must have been a revelation to salesmen who for years have been devoting every spare minute of their time toward thinking of ways to persuade the sales-resisting customer to buy gas appliances, may be interpreted as a preview of what is to come, particularly in the lush period which immediately will follow the war.

Thousands and tens of thousands of customers who have been forced to get by with worn-out appliances during the war are going to want them replaced during this lush period, and at once. It is a practical certainty that many of them are going to grab up the first appliances that are put on the market without too much consideration for quality. It should be remembered that, although there have been many scientific advances in home appliances under the impact of war, the public will not get the benefit of new, improved models for a year or two or three after the war, or perhaps longer.

Need for Rapid Transition

Many authorities warn us that the first two years after heavy fighting ceases, or the so-called lush period, will be a dangerous one, more dangerous to business even than the war years. Whether or not there is a dangerous boom or collapse will depend upon whether industry can increase its output of civilian goods as rapidly as individuals and enterprises will increase their expenditures for these goods. If the output of consumer goods is to meet the increased demand, the rate of increase must be far greater than it was in any year of recovery following 1933. Also it must exceed the pace set in 1919 and 1920 following the first world war. The National Association of Manufacturers predicts that during this period rationing will have to be continued; that, if all controls were relaxed at once, the rush of purchases would use up the available supply in spite of a

maximum increase in output.

A threatened, undesirable boom cannot be averted by traditional methods of credit control. A variety of methods, which for a short time will include rationing certain articles and for a longer time will include price controls may prove to be necessary.

Post-War Demand

If prices are held down reasonably well during the war and if a post-war boom or collapse is avoided, there will still remain, certainly for two years and perhaps for three years after the end of fighting an unsatisfied, deferred demand for both consumer and capital goods. By this time technological change will have affected methods and materials. The fruits of industrial research will have included new products, improvements in products and new uses for products. It is the period beginning at this time—the time when tools for making pre-war models have been dismantled and the new models make their appearance—a period which will be marked by bitter competition for aggressive selling, with which I propose to deal in answering the question: "Who Will Sell What?"

I prefer to reverse the order of the question and to discuss briefly, first, *"what"* will be sold.

Customer surveys show that Mrs. Henry P. Housewife has some definite ideas on the subject of household gas appliances and, mind you, Mrs. Housewife is that discriminating customer who has been willing to hang on to her old appliances for a few additional years in order that she might see for herself some of those magnificent, mystical models about which she has heard so much but which have remained such closely guarded secrets while in the process of manufacture.

Housewife Must Be Convinced

Mrs. Housewife is going to want, and to expect, that her home, and her kitchen in particular, shall be made trouble-free—and, when she weighs critically the merits of the new gas appliances, that very thought is going to remain uppermost in her mind when she asks these questions:

Will the new gas ranges be compact and economize on space? Will they be easier to clean? Will there be new temperature controls? Will the pilot lights give off less heat? Will their surface be of a material that will not chip, crack or stain? Will perfect insulation have been attained? Will the ovens be larger? Will there be built-in features, such as a pressure cooker for canning?

And what about gas refrigerators? Will a quick-freezing compartment be included along with extra space to store frozen foods? Will the box be of changed design, featuring more accessible shelves? Will the amount of heat given off be reduced?

And is that water heater going to have a drain valve designed so that it will automaticaly and periodically flush the heater? Will water be safely maintained at 180 degrees without injury to the heater?

When it comes to the new gas house-heating units, Mrs. Housewife will be thinking in terms of year-round climate control, probably the push-button kind. She will be thinking of the control of hot weather and humid weather as well as of coal smoke and dust being excluded from her home and don't forget, either, that Mrs. Housewife will want her range, refrigerator, water heater and cabinets all to match—perhaps all in one piece. Her new equipment must be beautiful as well as efficient.

Electric Appliance Competition

But who said that Mrs. Housewife is going to confine her post-war shopping to gas appliances? Whenever she has opened a national magazine within the last year or so she has been confronted with approximately eight times as much advertising, extolling the wonders of electricity and the virtues of electric appliances, as has advocated the use of gas. She has tuned in on many a coast-to-coast electric-sponsored radio programs. She has read billboard announcements galore, displayed by the electric industry, and has received further information through direct-mail messages. She has been told about electronics—and you can bet that she is going to see for herself whether she can really put a roast in the oven, immediately thereafter sit down to dinner, and then find that the meat is ready to serve by the time she has finished with her soup.

She has been told all of these things straight through the war period and —we may as well be frank about it— only one radio program has mentioned the word "gas" to her and that a fine nutrition program by a refrigerator manufacturer, itself a well conceived, splendidly achieved program of public service and industry pointed toward Mrs. Housewife on Saturday morning but, after all, *one* program.

The National Advertising Program

It is of great concern to me that, at a time when the gas industry is facing in post-war development one of the most momentous and difficult problems of its existence of more than a century and a quarter, the support for its national advertising program has waned. The inadequacy of the funds provided by the gas utility industry for national advertising, the failure of some to participate in the program and the willingness of others to surrender it and its acquired momentum because for the time being no appliances are available to sell— are these things due to shortsightedness or defeatism or the lack of confidence in the program itself? Don't tell me it's "combination-company indifference." I know better than that, and so do you. Perhaps we just did not have our sights set right.

Whoever said that a half-million dollars a year was enough of an advertising fund for a national advertising campaign which would do justice to and serve the purposes of the gas industry? Nobody said so; it just seemed to be about the best the gas utility industry could hope to do. As to that viewpoint, I think those who assumed it were optimistic, and regard it as one of the minor miracles of the age that the gas utility industry *put up that much,* even though it was "riding recovery" most of the time.

But from another viewpoint, perhaps we went about it the wrong way. Our sights might better have been set on the four million dollar fund needed to *match* the electric industry's annual national advertising expenditures, instead of on the arithmetical calculation that four cents times twelve and a half million equals half a million dollars.

Source of Funds

Where did the money come from for the electrical manufacturers' advertising—that four million a year? From their profits, of course—not from the utilities at so many cents per electric meter. The individual electrical appliance manufacturing companies set their sights on an adequate advertising appropriation; set a price on their product that would justify such an appropriation from their earnings, and proceeded to plaster North America with eight times as much advertising as could we with our "four - cents - a - meter" method. What have been the results as to electric appliances sold? Satisfactory to them, certainly, or they wouldn't keep on following the method. Why shouldn't they like it? The customer is paying the advertising bill, as in every other case on earth except our "four-cents-a-meter" method. The electrical appliance customer gets a *better* and a *cheaper* product because the advertising he is paying for brings

mass demand and, therefore, mass production that reduces the unit cost of appliances, and *also* provides huge funds for research that make his appliance a better one than the manufacturer's last previous model. And so the manufacturer and the electric industry have money for research as well as for advertising.

But never mind research, at the moment, though *some* gas utilities have *yet* to be convinced that they ought to spend from $100.00 to $5,000.00 a year on an industry-wide research program, believe it or not!

Creating Demand

Just now I am talking about what Mrs. Henry P. Housewife is going to buy after the war, and I am telling you what you already know: that she is going to buy that for which a desire has been kindled within her; that which interests and attracts her most and which promises to serve her best and which she believes will deliver the performance it promises; not that for which a lesser desire has been kindled; not that which interests and attracts her less.

If the huge investment of the gas industry is to be protected and competitive inroads blocked, we must continue to promote public acceptance of gas through advertising. When we build prestige for the industry in the eyes of the public, we also give renewed encouragement to gas men and dealers in every community, large or small.

Every forward-looking industry today has its eye upon the post-war market. The gas industry, with its active and strongly financed competition, cannot afford to fall behind the procession. Post-war competition from electricity will certainly be more serious than anything encountered during the last decade. Nor can companies selling both gas and electricity view the situation without concern. With government ownership in the electric field a greater threat than in gas, the maintenance of the value of the gas investment through informative advertising assumes increasing importance.

I have lost patience with some of the pictures painted of the fantastic, futuristic world of tomorrow. In fact, I consider advertising and publicity ill-advised that carelessly pictures wild and weird dream-world products without factual foundation. I cannot believe that the average person will take too much stock in such promotion.

Character of Copy

On the other hand, intelligent, constructive advertising is going to influence greatly the consumer demand, which will in turn determine what we shall sell. It is this type of aggressive advertising that must reach those hundreds of thousands of brides whose husbands are at war and who have never gone to housekeeping. It must reach those families who intend to buy or start building a home within six months after peace comes; those 900,000 families, according to a figure arrived at by a recent survey of consumers by the United States Chamber of Commerce. And those are not going to be reached effectively through advertising furnished by any "four-cents-a-meter" fund. Mind you, I am all in favor of continuing that fund. *Some* gas utilities do not contribute to anything *but* that fund, so let's not take that single virtue from them. We will need it to equal or to top the advertising done by electrical appliance manufacturers in the fields where gas appliances serve Mrs. Henry P. Housewife best with the largest number of household units—units made and sold post-war, to the invoice cost of which is added by the manufacturer that tiny fraction of its cost, which fractions, earmarked for cooperative advertising and added together, will far outdo and out-perform the intra-industry competitive advertising of electrical appliance manufacturers.

How to Raise the Fund

Specifically, let us agree that one and a half million gas ranges are going to be sold during the first twelve months following the end of the war and the removal of manufacturing and selling limitations. Two dollars added to the invoice cost of each of these by the manufacturer, passed on from the manufacturer to the distributor and from the distributor to the retailer and from the retailer to the customer and user, who is the real beneficiary of mass production and selling engendered by adequate advertising — this single charge of $2.00 per unit will produce a total of three million dollars. If the same plan were carried out with water heaters at $1.00 per unit $800,000.00 might be expected to accumulate within a year. $200,000.00 more raised by a similar arrangement with manufacturers of better heating equipment would bring a total of four million dollars. Such a fund would provide adequate financial backing for an advertising program whereby the gas appliance manufacturer and the gas utility industry would outdo and outperform the utmost efforts and results attained by the competitive advertising of electrical appliance manufacturers.

Cooperative Advertising

And, if you think that gas appliance manufacturers will not enter a cooperative program of gas appliance advertising, did you ever try showing them a workable program, and find out whether they would? I am well aware that in 1937 some nibbling was done at this subject when the idea was put forward that, of the two million gas ranges expected to be manufactured and sold that year, gas utilities would sell about 800,000; that utilities representing seventy per cent of these sales might be willing to go into a plan to contribute $1.00 for each range sold by them whereby a fund of $560,000.00 would be forthcoming for advertising purposes. Objection was made to this in view of the fact that the entire contribution would come from the utilities and so an alternate plan was offered whereby the gas utility making the sale and the appliance manufacturer who made the range would each pay fifty cents. That did not seem to work because many manufacturers of gas ranges sold none of them to utilities, which put the entire burden on those whose customers the utilities were, and so this plan fell by the wayside, though vigorous effort was put forth in its behalf and the A. G. A. E. M. was thoroughly cooperative. Then later on some consideration was given to the matter of participation by the range manufacturers contingent upon an increase in our "per-meter" contribution from four cents to six cents. However good these various plans have been, we are today at ebb tide of our eight-year program of national advertising. To get the fund back up to what it was in our best years is a tremendous task and some substantial elements of the gas utility industry, who for their own good reasons have not seen fit to participate in the past, may be expected to adopt the same position in the future.

The Dealers Join In

And, if you think that gas appliance retail dealers—not merchandising utilities, but individual dealers—will not enter a cooperative program of gas appliance advertising, did you ever try to show *them* a workable program and find out whether they would? We have done it for years—that is, those years in which there were appliances to sell. Our cooperating dealers—every good dealer in every town and city we serve—have for years past joined in cooperative

newspaper advertising, with each paying his proportionate part of the cost. We look upon it as a regular accepted practice and so do they.

Well, just to try out these dealers' attitude on cooperative national advertising to be accomplished in the way I have been talking about, we have recently made a survey of cooperative dealers in Houston and in as many towns of our system as we could cover in a brief time. Here is the outcome of that survey:

I have here a document containing the signatures of retail dealers who represent the sale of 17,500 gas ranges annually in our company's area, endorsing and requesting the creation of a fund, at $2.00 per range to be added to the invoice cost by the manufacturer, and to be remitted to the American Gas Association National Advertising Committee to supplement the National Advertising program. This means $35,000.00 for the fund.

I have here also a letter from the Associated Master Plumbers of Texas, by its President, P. G. Callahan, of Houston, which looks with favor and offers its endorsement of the creation of a fund at $1.00 per Automatic Water Heater, to be added by the manufacturer to the invoice cost, which fund is to be used to supplement the advertising program of the American Gas Association. This also means $35,000.00 annually for the fund.

These two proposals alone aggregate $70,000.00 annually and can be duplicated at the same rates throughout the country, if the gas industry is really interested in and desirous of acquiring sufficient funds to finance an advertising campaign worthy of the industry.

If the manufacturer should agree and the retail dealer should agree to this plan, why should the distributor or the merchandising utility hang back? What we need, my friends, is to adopt the attitude, "How can we accomplish the needed advertising volume?", *not* the attitude "we cannot do more and better advertising than we have been doing." During the past few years we have had an opportunity to observe the result of the defeatist attitude in the affairs of other nations. Why should our industry not benefit by their experience?

Consolidated Effort

I offer the National Advertising Committee the proposal, for what it is worth, that it set its goal at the amount required and then proceed to plan to achieve it. I do not see where the objection can come to the suggestion put forward. Certainly not from the manufacturer nor from the distributor nor the retailer, for in each instance the fee is passed on, and least of all from the final beneficiary, the purchaser and user, because his is the full benefit of mass production and the consequently greatly improved and cheaper product. If a legal objection should pop up, though I apprehend none, modify the plan accordingly and go ahead from there. If other objections appear, they may be treated likewise but *we should not lose sight of our goal* if you agree with me that it is one that should be achieved.

I have added this comment on national advertising to what I have had to say about what gas appliances will be sold post-war because I believe and repeat and re-emphasize what I believe to be a fact: that gas appliances which are worth wanting and which the public is informed about and is led to desire are the answer to the "what" will be sold if, indeed, the gas industry holds the answer.

Home Building in the Picture

Many economists and business leaders feel that the only industry that can help us out of any possible post-war depression will be the home building industry. Some of this new home building will undoubtedly be in the form of pre-fabrication. The President of the Celotex Corporation foresees putting a completely equipped furnace in a house in six minutes; a kitchen with all appliances almost as quickly, the appliances having been constructed in a single prefabricated unit. In such instances *what* we will sell is going to depend upon our contacts and influence with builders and architects, and our ability above all to keep pace with the mass production methods, the standardization and the simplification that will characterize the housing field. *What* we will sell in terms of appliances will continue to be ranges, water heaters, refrigerators, house heating and air conditioning units. Each of these appliances will feature substantial improvements in the post-war decade, I am sure. Whether they will present the same form or approach their function through methods identical with those of the present or whether they will be affected by dazzling invention remains problematical.

Winning Customer Favor

What we will sell, by and large, will be determined by our ability as an industry to produce within reason the type of appliance our customers want or which we may properly lead them to want, with due consideration, of course, to the cost factor. The extent to which such appliances win the favor of the public will, to an appreciable degree, be determined by the ground work laid at this time.

Who Will Sell?

Now that we have discussed *what* will be sold, let us refer again to the title of this paper, and inquire *who* will do the selling. In the mad scramble for markets after the war it is equally as important in our case to know *who* will sell as *what* will be sold. In other words, the struggle will not be just a competition of products but much more a competition of distributing organizations and merchandising methods.

I doubt that there will ever be a better or more appropriate time than this for gas utility companies to wipe their slates clean and start from scratch with respect to their merchandising methods. Surely no better opportunity was ever offered individual organizations to review and analyze their past policies, plans and programs. It is hardly possible that they will discover no phase of their activity which would be better for being revised or supplemented or perhaps discarded altogether and replaced by another method.

Information has been sought by a Post-War Planning Sub-Committee of the American Gas Association as to the nature of the load-building and merchandising activities with which gas utilities will concern themselves following the war. In response to a questionnaire circulated by the Sub-Committee, 164 companies had reported by September 30, 1943, of which 140 have practiced a merchandising policy of selling gas appliances to the public for their own account. Of these, 17 reported as being undecided concerning their post-war plans, one expects to drop its merchandising program entirely, 13 are planning other variations of their pre-war activities, one has a new plan—undisclosed—and 108 out of the 140 contemplate *no* change whatever. Of the 24 companies reporting who do not sell gas appliances to the public for their own account, four of these are planning to re-enter the merchandising field after the war, two are undecided as to whether they shall or not and eighteen expect to continue their non-merchandising policies. The number of companies reporting, totalling 164, is fully representative, as the reporting companies represent 82½ per cent of the total meters in the United States.

Merchandising Policy

As to numbers, these figures reveal that some people are doing some thinking, even if it appears to lead them in opposite directions. Any merchandising program and any merchandising policy that is not continually being tested and tried in the light of new and changing developments is not having a fair chance to do its best for the stockholder and security owner in whose interest it is to be used. While I do not think it likely that the experience of our company, serving a small and prosperous area along the Texas Gulf Coast, will lead us to throw overboard a program of dealer-cooperation which has been responsible for the sale of more than four and a half million dollars worth of gas appliances in less than nine years—with every sale made by a dealer—I would be delinquent in my duty to my company and unappreciative of my opportunities if we did not review our situation and determine in what respects our policies should be altered and our program modified and enlarged in view of changing conditions.

It is odd, not to say remarkable, that apparently satisfactory results can be attained by widely different—almost diametrically opposed — merchandising programs, but there was more than one key to Baldpate, more than one road to Rome, and it is not for one of us to say to another, "Thou shalt" or "Thou shalt not." I regard it as vastly more important that we shall examine our pre-war policies and programs and, whether we add to or subtract from them, that we work out plans which will do the utmost to stimulate appliance sales, that is to say, to obtain a wider distribution of efficient gas appliances. None of us expect that some manufacturer will produce an appliance that will cause people to come along and take it away from us and from the appliance dealer. Always we and he are going to have to convince the public, including Mrs. Henry P. Housewife, of the superiority of gas over other fuels and the immense satisfaction to be attained with the use of gas appliances. This means convincing the management of the gas company from top to bottom; the gas company employees, the gas appliance dealers and their employees and, equally important, our customers. And it will not be sufficient for us to attempt to *equal* the sales achievements of pre-war years. If we adopt a program of holding our own, we will find that we have no market to hold. The defensive position is no better than the defeatist attitude. If

(Mrs.) Betty Coy is one of the enthusiastic young women doing vital war work at Estate. Her husband in the Sea-Bees and three brothers in the Army inspire her victory production.

"I'm punching out return tickets for four."

"I know that my husband . . . with the Sea-Bees over in New Guinea . . . isn't going to be back tomorrow. Or next week. Or next month. Neither are my three brothers in the Army. But I do know that the more planes and equipment we deliver to them, the *sooner* they'll get back . . . that the surest 'return ticket' we can send them is the kind of fighting equipment Estate and other great plants are turning out right now.

"I guess that explains why we're all putting something *extra* into our jobs here at Estate. And, from what the old-timers tell me, giving each piece of work that 'something extra' is a regular Estate custom, even in peacetime."

Over the Estate plant in Hamilton, Ohio, under the Stars and Stripes, flies the Army-Navy "E" flag for excellence in war work production.

ESTATE

...the NAME TO REMEMBER IN COOKING AND HEATING APPLIANCES FOR ALL FUELS

The Estate Stove Company, Hamilton, Ohio

our service is best for the prospective customer, then we should have his business. There are two million electric refrigerators which have worn out, shaken themselves to pieces and practically deafened their owners during these years of enforced scarcity. In these two million refrigerators is an annual revenue of twenty-five million dollars, if each should be replaced by a gas refrigerator. If we leave the defensive and take the offensive, this can be accomplished. If not, it certainly will *not* be accomplished.

Effect on Manufacturer

It is apparent that the answer to the problem of "Who Will Sell What?" will be of immense interest and value to the manufacturer in planning for post-war. If he is able to count on the gas utility to assume some responsibilities in the direction of gas appliance merchandising, his problem is considerably simplified and he may move forward more aggressively and confidently. If some sort of unanimity could be reached among gas utilities as to their dealer relations and confidence established in the oft-asserted desire to cooperate, a good deal of price chiselling, excess trade-in allowances and other undesirable selling practices could be avoided. Regardless of the benefits of "dealer-coordinating" and "dealer-cooperating" plans which involve competitive selling by the utility itself—whatever those benefits may be—every merchandising utility, just as every *non*-merchandising utility ought to see to it that every facility it can lend to the dealer is lent; that his agency for approved appliances is put before and kept before the public; that equitable service arrangements are provided; and that his installment sales terms are as attractive and advantageous as the utility's own (for installment selling is not gone forever). For, if these things are not accomplished in one way or another that dealer will not be a serviceable member of the family which sells appliances through which our gas is burned and load put on our lines, which is, as I understand it, what we are trying to accomplish; or have some of us fallen completely in love with the idea of selling all or most of the gas appliances ourselves? It seems to me that our Post-War Committees should continue their study in this direction and earnestly attempt to solve these merchandising problems which, unanswered and uncontrolled in the past, have cost us good-will, prestige, money and good business. When victory comes, it will be too late to jump into this job and proceed on a helter-skelter basis. *Now* is the time to make our plans and put our organization on paper, at least.

Analysis and Planning

At this stage of the game we can carefully analyze possibilities, set down working policies, lay out operating plans and bring them up for review, piece by piece, *calmly*, sensibly and unhurriedly. Only in so doing will we be prepared for an efficient, effective conversion to peacetime economy.

One more word, If we of the gas industry are fully prepared to step forward when the war is won, in full cooperation with individual dealers, large and small—if we can see that far beyond our noses—the threat of government competition will be minimized, for all the government bureaus in the world cannot out-design, out-produce and under-price the management and brains available in the ranks of American business under the system of free enterprise by which our nation has grown great.

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GAS HOLDERS • PURIFIERS • INSPECTION

40 YEARS OF SOUND

STEEL PLATE CONSTRUCTION

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For Sound Values and Continuous Operating Economy

Meters for Domestic and Industrial Use. All Sizes 5B to 60C.
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167 41st Street Brooklyn, N. Y.

Prize-winning photograph by Julian Jordan of the Peoples Gas Light & Coke Company, Chicago, Illinois.

On EVERY battle front the United Nations are marching forward—the "big push" is on and will not stop or falter until complete victory is ours.

Ever since before Pearl Harbor the gas industry has played a vital part in preparation for this day of offensive warfare. Every essential industrial demand for gas has been met, despite material shortages, scarcity of manpower, and the requirement of maintaining equipment while operating at peak capacity.

Under these strenuous operating conditions, gas purification has assumed more importance and posed new problems. Connelly has kept pace with these extra demands not only by supplying purifying materials as needed, but also by developing material refinement and improved methods of applying them.

Throughout 60 years of service to the gas industry, Connelly engineers have always worked closely with leading technicians in the field. This practical experience, plus field data and the results of extensive laboratory research, are always at your disposal. Whatever your day-to-day purification problems may be, it will pay to consult Connelly. There's no obligation.

CONNELLY IRON SPONGE & GOVERNOR CO.

CHICAGO, ILL. ★ ELIZABETH, N. J.

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Efficient Operation of Small Water Gas Machines

Part 2

By
S. F. McCallister
The Twin State Gas & Electric Co.
Brattleboro, Vermont

The Steam Run

DURING the run the objective is to decompose all of the steam possible. Therefore steam rates should be adjusted for the fuel bed temperatures in use so that as little undecomposed steam as possible goes through the fuel bed consistent with clinker control.

Short runs should be the rule. Coupled with short blows, these tend to give uniform fuel bed temperature and good steam decomposition.

Since the chemical reaction of decomposing the steam takes heat from the fuel bed, the temperature of the fire decreases as the run progresses. When fire temperatures decrease, the steam decomposing power of the fuel bed also decreases; and a poorer quality of blue gas, with increasing percentage of carbon dioxide (CO_2) is produced. Also as the temperature falls, a greater proportion of the steam goes through the fire without being decomposed and so removes heat for no good purpose. With short runs the temperature does not fall as much. Therefore better steam decomposition and better blue gas are the result.

About four minutes is the maximum length of run that should be used, with three minutes a better figure. Some plants, with automatically controlled machines are using even shorter runs, but three minutes is about as short as can be handled with a hand operated set and this only if valves are conveniently placed. Otherwise too much of the total cycle is lost by valve changing time.

The rate at which the steam passes through the fire has very little effect on the steam decomposition. As in the blow, the fuel bed temperature is the important factor; and for best steam decomposition as high a temperature as is possible is the most desirable in theory. In practice, however, there are limitations as to how high a temperature can be successfully used; for as previously pointed out, too high a temperature will produce more carbon monoxide (CO) on the blow than necessary to heat the carburetor and superheater. High fuel bed temperatures also increase the radiation and waste gas losses. Therefore a compromise must be made so that efficiency in blasting as well as efficiency in gas making will be attained.

Steam passing through the fire undecomposed represents a total loss both of generator fuel and boiler fuel. It is superheated in its passage through the fuel bed, and leaves the set with considerably more heat than it has when it entered. This heat is taken from the fuel bed and must be replaced by burning more generator fuel, and this heat is lost in the wash box condensers and scrubbers. In addition it has been proven that the percentage of carbon dioxide (CO_2) in the blue gas increases in almost direct ratio to the increase in undecomposed steam. This reduces the heating value of the blue gas, as carbon dioxide (CO_2) is non-combustible and will make necessary the use of more oil if Btu is to be maintained.

The heat that will be removed from the fuel bed by steam passing through it without being decomposed is about one-seventh (1/7) of that which the same amount of steam would remove if it were decomposed. This is one of the reasons why the air steam ratio is not a complete indication of fuel bed temperature. It can readily be seen that quantities of undecomposed steam can go through the fuel bed without having as marked an effect on fuel bed temperature as would be the case if the same quantity were decomposed. On the other hand if undecomposed steam is considerable, large losses of generator fuel can occur.

Steam Quantities per MCF Made

Particularly in the small plant, there is a great tendency to use too much steam. This should be checked daily by calculating the pounds of steam used per MCF of gas made. (Steam per run divided by MCF per run.) If the figure is much over forty (40) pounds, attention should be directed toward reducing it. Good performance is indicated by from thirty to forty pounds, thiry-five (35) pounds being a good average, with good fuel and 525 Btu. gas. Higher Btu should require less and lower Btu more. Light porous coke will also probably require more steam than will dense heavy coke.

The amount of steam theoretically needed to make one thousand (1,000) cubic feet of blue gas is about twenty-five and one-half (25½) pounds. Since part of the finished gas is oil gas and about 60 to 75 cubic feet of oil gas is made per gallon of oil, the theoretical requirements for steam depend roughly on the number of gallons of oil used per MCF made.

For instance with 2.7 gallons of oil per MCF, there will be approximately 189 cubic feet of oil gas and 811 cubic feet of blue gas in each MCF of finished gas. The 811 cubic feet of blue gas requires, theoretically, nineteen (19) pounds of steam (@ 25½ pounds per MCF). In practice from one and one-half to two times the theoretical quantity is necessary, or from 30 to 38 pounds for the example given.

The necessity for steam in excess of the theoretical quantity is largely for the control of clinker, although there are some other factors which will not be considered at this time.

Where excessive amounts of steam have been used, the first result of cutting steam rates probably will be a harder clinker formation. The fire will also run a little hotter, although fire temperatures will not increase as much as they would were steam rates cut where they are not excessive to

start with and undecomposed steam is a minimum.

Clinker conditions control the minimum amount of steam that can be used with a given fuel. Where clinker trouble is encountered it is well to try varying the percentages of down steam, and if this does not help, to try using larger amounts of steam at the beginning of the run and cutting steam rates toward the end of the run. Excess steam may be justified for the control of clinker when the fire is at its maximum temperature at the start of the run, but it does no good, as far as clinker is concerned, when the temperature falls as it does, toward the end of the run.

Where the fusion temperature of the ash is low it may be advisable to control clinker by reducing the amount of generator air used during the blow. If the fusion temperature is below 2200° F., better clinker conditions are sometimes obtained by limiting the air per blow to from 350 to 400 cubic feet per square foot of grate area. These quantities are somewhat lower than those given in Table II, and lower make per run can be expected.

If hot valves or three-way valves do not seat tightly, steam will by-pass them, and a false figure of steam per MCF will be obtained from the steam meters. These valves should be inspected and found to be tight before changing steam rates, if high steam per MCF is found. Leaky hot valves or three-way valves also are often responsible for poor results and low capacity, and should be corrected in any event.

The Use of Down Steam

Split runs are greatly to be preferred to alternate up and down runs, as the fire will be kept in a more uniform condition. This is the general practice today.

Down steam cools the top of the fire and carries heat to the bottom. This tends to reduce the carbon monoxide (CO) formation during the blow and to harden clinker on the grates since, with a high temperature at the bottom of the fire, the molten ash does not harden until all of the combustible is consumed.

Using the maximum percentage of down steam results in lower generator fuel per MCF; but more up steam, by reason of higher temperatures at the top of the fire, is apt to give better steam decomposition and better quality of blue gas, which results in less oil required per MCF.

The usual practice is from 45 to 55 per cent of the total steam to be used as down steam; and the operator will have to work this out for the conditions in his particular machine. If low air/steam ratios are in use, care must be taken that enough down steam is used to prevent thin and weak fires from developing.

Thin, Weak Fires

Thin, weak fires are apt to develop if an insufficient percentage of down steam is used, particularly if the air/steam ratio is low. Such a condition gives poor operating results and lowered capacity.

When the percentage of down steam is insufficient, the cooling action of the up steam causes a fall in temperature, and finally extinction of combustion in the bottom of the fuel bed. The combustion and reduction zones creep upward and the effective depth of the fuel bed is reduced. When the condition is extreme "black eyes" appear near the walls at the top of the fire. Capacity falls off and the heating value of the gas per cubic foot increases unless oil per run is cut. There may be difficulty in heating the checkers to the proper temperature. During the blow the heat of the combustion gases will not be extracted in the top part of the fire; and this heat is lost to the generator, further reducing its effectiveness for steam decomposition. Due to the small amount of heat stored in the thin, fuel bed considerable steam will go through undecomposed and heat will thus be lost in superheating this steam. The quality of the blue gas suffers as well as the quantity.

When such a condition develops there are two courses open to correct it: The down steam percentage may be increased by adding to the down steam and cutting the up steam, leaving total steam as before; or by keeping the percentages of up and down steam the same and reducing the amount of both, the air/steam ratio may be increased.

The first acts only to redistribute the temperature zones by returning more heat to the bottom of the fire. The second will increase the average fuel bed temperature; and even though the percentage of down steam remains the same, more heat is available to be returned to the bottom of the fire.

Which is to be preferred depends largely on the air/steam ratio in use. The first is probably the best if air/steam ratio is already high (although weak fires are not so apt to develop with high air/steam ratios), but the second will give better steam decomposition due to the higher fuel bed temperature. On the other hand higher fire temperatures cause increased losses and will increase fuel per MCF. It is largely a question of using judgment for the conditions present and the relative price of fuel and oil.

The Oil Run

Most small plants use light oil for carburetion and do no reforming. The subject will therefore be treated from that angle.

The objective during the oil run is to crack the oil in such a manner that the maximum Btu for a given quantity of oil is obtained in the gas. To do this the oil must be neither over-cracked nor under-cracked. Over-cracking produces

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lampblack; and naphthalene may also be produced in excessive quantities. When either of these is produced the heat value of the carbon in them is lost to the oil gas, and in the case of naphthalene the heat value of the hydrogen is also lost. Under-cracking results in oil gases that are not stable, and condense to liquids when cooled. The heat value of such condensable vapors is lost to the gas.

The principal factors which determine the efficient cracking of the oil are (1) the temperature of the cracking chambers and (2) the length of time that the oil vapors are in contact with the heated checkers.

Temperature of the checkers is the most important factor and its control has already been discussed. Once the correct temperature has been determined for a given oil, and a given set of operating conditions, it is a comparatively simple matter for the operator to maintain that temperature. Whether the temperatures are maintained efficiently or not depends on whether or not the machine is operated in accordance with the principles previously laid down. The efficiency of maintaining the temperatures in the checkers has nothing to do with the efficiency of oil cracking and affects generator fuel results only.

Oils differ and the operating conditions in no two machines are alike, therefore the correct temperature for most efficient cracking must be determined by experiment.

The time of contact of the oil vapors in the checker chambers is closely related to the temperature of the chambers for a given oil. Generally speaking, long time of contact requires lower temperatures and short time of contact requires higher ones. It must be remembered, however, that some oils require longer or shorter times of contact at the same temperatures as do others and there is no particular rule that can be applied to cover all conditions.

There are several factors that are instrumental in determining the time of contact. There are (1) the spacing and amount of checker work, (2) the rate at which the oil is fed to the carburetor, (3) the rate of making blue gas and (4) the amount of undecomposed steam present in the checker chambers.

The spacing and amount of checker brick determines the space available for the blue gas, undecomposed steam and oil vapors to pass through and the smaller this space, the higher the velocity for a given rate of production of gas. The amount of checkers will also determine the amount of heat that can be stored in them at a particular temperature, and thus the amount of heat available for cracking the oil.

If the oil vapors went through the brick work by themselves, time of contact would be determined by the rate of oil input, with a given spacing and amount of checker brick. But the blue gas, which is being made at the same time, must also pass through the brick work; and this increases the volume of gases per minute. If the volume per unit of time is increased the velocity must also increase. Therefore the rate at which blue gas is being made influences the time of contact of the oil vapors to the brick. The rate of blue gas production is, in turn, determined by the steaming rate and the temperature of the fuel bed.

In the same manner undecomposed steam, coming from the generator also occupies space and increases the volume, decreasing the time of contact.

From a practical operating standpoint, these last two factors should be kept in mind and whenever any change is made that changes the rate of blue gas production, such as altering steam rates or changing fuel bed

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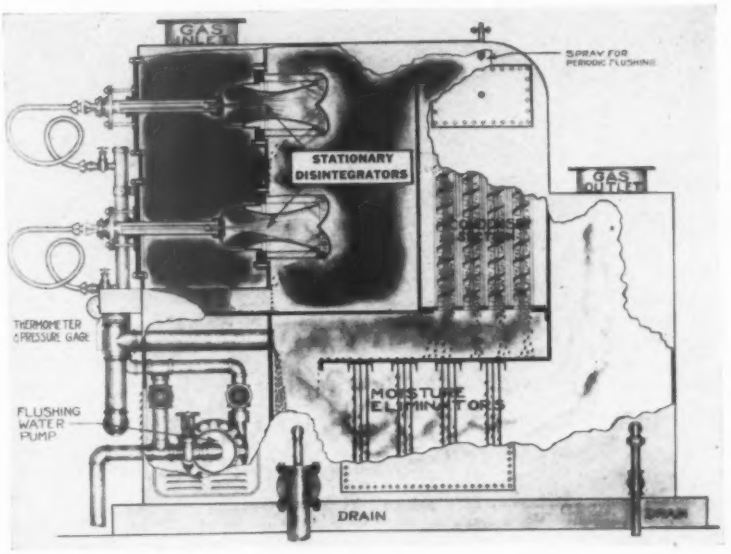

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temperatures, it should be remembered that such changes influence the time of contact of the oil vapors, and may require a change in checker temperatures if the oil is to be cracked efficiently.

Determining the Correct Cracking Temperatures

The best temperature for most efficient oil cracking can be approximated by making the "trowel test." This is done by allowing gas from a small cock tapped into the pipe from the wash box to impinge on a clean cool trowel for a few moments during the oil run. The nature of the stain will indicate the cracking taking place. Under-cracking will be evidenced by an oil stain; over-cracking by the presence of lampblack, and good condition by a dry brown stain. If temperatures are not correct changes can be made until the proper temperature is determined. If the correct stain can not be had through the usual range of temperatures, it will be well to try varying the rate of oil input even as much as 100%.

Once the correct temperature and input rate have been determined, daily tests should be made to see that the proper efficiency is being maintained and that nothing has developed to change the factors that control this.

Constant observation of the water in the overflow seal from the wash box is another good method of checking oil efficiency. When the oil is being properly cracked there will be a mixture of tar and water here, while under- or over-cracking will be evidenced by a scum of either oil or lampblack on the surface of the water.

The cracking of oil is a very complex chemical process and it merits considerable experiment in changing temperatures, oil input rates and even steam rates in determining the best operation for highest efficiency.

Oil Sprays

All too frequently too little attention is paid to the performance of the oil spray. It is not sufficient that the oil spray put the oil into the carburetor. A proper performance should give a fine mist of oil and it should be distributed evenly over the top of the checkers. A spray that is distributing over too wide an area will deposit oil on the side walls of the carburetor and the best oil efficiency will not result. Nor will best efficiency result from a spray that is distributing the oil over an area that is very much less than the internal diameter of the carburetor.

Oil sprays should be tested frequently by removing them from the machines and setting them up so that they are the same distance from the ground that they are from the top of the checkers when in use. Oil should be used for the test, as water and oil do not perform the same, and the pressure used should be the same as is used in actual practice. Observation should be made as to the fineness of the atomization; and the area covered on the ground should be correct for the internal diameter of the carburetor. As oil input rates are usually varied slightly from time to time to control Btu of the gas made, it will be well to check the operation at various pressures. When the spray is in the machine a pressure gauge on the oil line will then give some idea as to what is going on as to distribution of the oil.

Other Factors in Oil Efficiency

The operator should not be too hasty about turning on the oil when the run commences. At the beginning of the run there is no blue gas in the carburetor and there is a very high surface heat in the brick at the top of the carburetor. By waiting about ten seconds after the steam is turned on this high heat will be removed by the blue gas. Its presence might over-crack the first of the oil. The presence of blue gas in the checker chambers is also of much value in cracking the oil. This subject has not been mentioned previously but the presence of hydrogen definitely improves oil cracking results.

The oil should be shut off a little time before the back run commences in order that the oil gas be cleared out of the checker chambers before the down steam comes on and drives it back through the fire. About fifteen to twenty-five seconds is correct for this, but if the set is not of back-run construction it is not necessary to consider this practice.

Oil Efficiency by Improving Blue Gas Quality

The apparent oil gas efficiency can be improved by improving the quality of the blue gas. Generally this results in higher fuel per MCF and slightly decreased capacity but it may be of value in certain situations.

There are several operating methods which will accomplish this. At the end of the blasting period the steam may be turned on for about five seconds before closing the stack valve. This will purge the set of low

(Continued on page 58)

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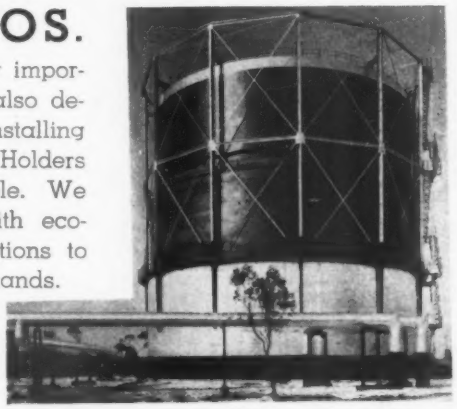

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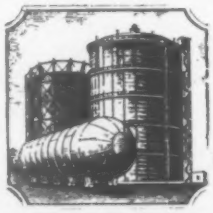

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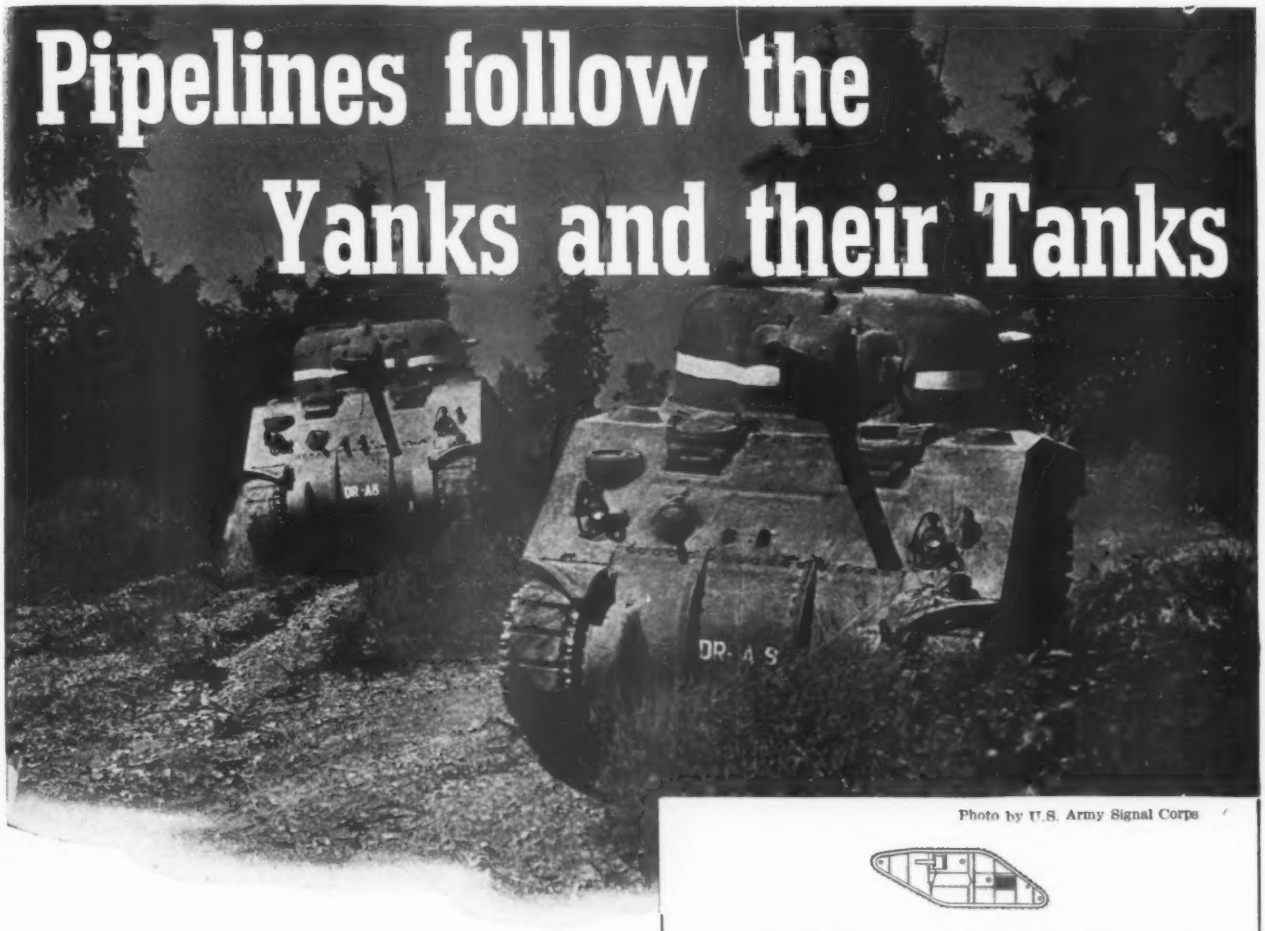

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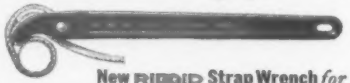

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New Butadiene Plant in Southern California

By
Fred A. Herr

A BUTADIENE PLANT constructed by Southern California Gas Co. for production of essential ingredients of synthetic rubber under the Rubber Reserve Co.'s program was nearing completion in September.

Of the total valuation of the plant, about 50% represents the value of gas-plant equipment owned by the company which was converted to and, in some instances, remodeled for service in the butadiene project and represents 50% of the estimated cost of new construction and new equipment.

The project under which one of Southern California Gas Co.'s gas manufacturing plants is being enlarged and co-ordinated with new installations to produce raw stocks for synthetic rubber production, was launched in the summer of 1942 in co-operation with Rubber Reserve Co. A survey made early in 1942 by technicians of Rubber Reserve Co. disclosed that a butadiene plant could be built in Southern California at a saving of time and about 50% of the cost of an entirely new plant by making use of apparatus, which the Southern California Gas Co. had on hand in the form of an existing gas manufacturing plant. The use of existing equipment was in accordance with Rubber Reserve Co.'s policy to conserve strategic materials wherever possible. This policy has been carried out rigidly in the construction of the Los Angeles butadiene plant.

Notable examples of this conservation policy are the substitution of concrete for steel in the construction of chimneys, large water lines and feed stock heaters; employment of large quantities of used refinery equipment and other machinery; and collaboration with oil companies for inter-connecting existing pipe-lines to carry feed stocks to the plant and crude butadiene and recovered light oils away from it, in a manner which saved much time, expense and material which would have been required to build an entirely new pipe-line system.

Work Begun in 1942

Work was begun in August, 1942, with funds supplied by Defense Plant Corporation. An operating agreement was entered into between Rubber Reserve Co. and Southern California Gas Co. whereby Rubber Reserve committed itself to supply gasoline feed stock used for producing gas-containing butadiene. The agreement provides that Rubber Reserve will pay its standard fee per ton of butadiene produced, the fee to cover management expenses of the plant as well as any charges which might be assigned for the use of the gas company's equipment.

The project involved remodeling the existing company-owned equipment and erecting and installing new facilities in nearly equal proportions. Construction proceeded in two principal phases. The Southern California Gas Co. handled the work involved in redesigning and remodeling the existing gas generating plant and installing accessory equipment for production of butadiene and recovery of light oils. In the other project, C. F. Braun Co. designed and erected an absorption unit for treating compressed gas from the above-mentioned plant and extracting therefrom the crude butadiene and butylenes.

The entire project constitutes a naphtha cracking plant for cracking naphtha, into gas-containing light oils and butadiene vapors. Production capacity of the plant is expected to be around 100 tons per day, or approximately 35,000 short tons annually of butadiene, plus a somewhat greater amount of butylenes.

Arrangements have been made for delivering the crude butadiene (Crude C_4 fraction) from Southern California Gas Co.'s plant to the Shell Chemical Co. for purification into finished butadiene. From there it is delivered to a copolymer plant for polymerization with styrene, made by the Dow Chemical Co., into Buna S synthetic rubber.

55,000 Mcf. Daily Capacity

Normal daily capacity of the Southern California Gas Co.'s plant before enlargement for the current program was 48,000 Mcf. of 1000-Btu gas from Diesel oil. The alteration and the change-over to naphtha feed stock will result in increasing production of gas from the generators to a daily volume of about 52,000 Mcf.

The gas generators are expected to yield liquid products in the form of 4,000 bbls. daily of wet tar and oil emulsion from the tar sump; 2,200 bbls. daily of wet oil and emulsion from the scrubber; and 2,000 bbls. daily of oil from the oil stripper, for a total oil and emulsion recovery of 8,200 bbls. daily. Final liquid products will be obtained at a rate approximately 5,500 bbls. of light oils and 2,000 bbls. of tar and heavy oils daily.

The 52,000 Mcf. daily residue volume of the gas generators goes to the absorption plant where the C_4 fractions, propane and C_5 "+ gasoline" are extracted.

Gas Generators Rebuilt

Gas generators of the straight-shot, formerly of the up-fire down-make oil gas machine type, which formed part of the existing equipment of the gas company's plant, have been remodeled for operation in the butadiene production program. These generators have diameter of 27 feet and height of 42 feet, and were equipped with wash-box seals, water and oil scrubbers and the usual circulating water, fuel and miscellaneous pumps.

Under the conversion program the generators have been remodeled into downward heating units, with the interior equipment installed in the following top-to-bottom sequence:

Super-heater area.

Heating chamber designed for burning either oil or gas.

Naphtha cracking section, filled with fire-brick checker-work, in which naphtha is cracked.

Gas discharge to washbox.

Flue off-take through naphtha preheater to chimney.

The superheater section is supported by an arch, the cracking section by piers rising from the bottom of each generator unit. Serving the cracking chambers of the generators is a new steam superheater for raising the temperature of the steam entering the cracking area to a high degree.

Five Naphtha Pre-Heaters

The plant has been equipped with new naphtha preheaters. One preheater serves two generators and each preheater has an individual stack. The operating procedure of the plant is to have one generator in each of the dual set-ups at heating stage while its companion is making gas. The generator operating cycle consists of about equal times for the "heat" cycle and the "make" cycle, with adequate intervals for purging and valve operations.

Before the present arrangement on the interior of the generators was adopted and installed tests were made over a period of months with a 20 x 38 foot generator and other equipment. The present arrangement of the brick work in the generators was evolved after numerous experiments. The generators were rebuilt according to designs made by technicians of the Southern California Gas Co.

In addition to the generators, other carry-over equipment of the gas company which is being utilized in the butadiene project consists of a boiler plant with capacity of 300,000 lb. steam per hour at 150 lbs. per sq. in.; oil storage tanks; a 1000-Mcf. relief holder in which gas produced in the generators is stored; and a 6,000 Mcf. storage holder in which gas from the relief holder is stored after the hydrogen sulfide has been removed in oxide purifier boxes.

Equipment Added

To adapt the existing gas-plant equipment to the production of butadiene, the program called for a substantial expenditure for new equipment and remodeling work. Some of the new equipment items have already been touched upon in references to the generator remodeling work (above).

Largest among the new installations are an absorption plant and a 50-foot diameter Hortonsphere. Gas is taken from the 6,000 Mcf. storage holder by two 1000-Mcf. per hour steam-driven compressors and introduced into the Hortonsphere at an intermediate pressure. The absorption plant is designed to draw gas from the sphere to gas-engine direct drive, angle-type Cooper-Bessemer compressors. From these compressors the gas goes to the scrubbing and fractionating units.

New equipment other than the absorption unit, Hortonsphere, superheater and downward heating checker-bricking in the generators, consists of the following items: Three new boilers of 70,000 lb. per hour rating which, plus the old boiler plant, provide a total capacity of 510,000 lb. steam per hour for butadiene production; naphtha feed stock heaters, which utilize heat from the waste flue gas; a tar light oil dehydrator of 8000 bbl. capacity; oil stripper; tar light oil separator; 48-inch brick-lined hot valves; cooling towers; four large water pumps and miscellaneous auxiliary pumps; and steel tanks for storing recovered light oil.

Inter-Connected Pipelines

A commendable spirit of co-operation was exhibited by the various companies which are participating in the entire synthetic rubber project in Southern California, of which the gas company's plant is only one unit.

This co-operation was demonstrated in striking manner in the matter of pipe lines which deliver gasoline feed stock to the gas company's plant. In order to deliver the feed stock directly to the gas plant, as provided for in the agreement with Rubber Reserve Co., various pipe lines owned by different firms were inter-connected in such a manner that limited footage of new lines had to be laid, resulting in saving of manpower hours and material and the complete elimination of the use of railway tank cars and trucks.

Integrated with Other Plants

Integrated with the gas company's butadiene plant are other plant units in which the various processing steps required in the production of the ultimate product—Buna S—are carried out. The main plant for purifying raw butadiene and converting it into finished butadiene is operated by Shell Chemical Co., for which unit Southern California Gas Co. furnishes the raw stocks. A plant now being built by Standard Oil Co. of California will also supply a portion of the finished butadiene. Styrene, which combined with butadiene forms Buna S, is produced in a plant operated by Dow Chemical Co.

Polymerization Unit

The polymerization plant was financed by Reconstruction Finance Corp. through its Defense Plant Corp., by which agency it is supervised and owned. The production end is being operated for the Rubber Reserve Co. by Goodyear Tire & Rubber Co. and United States Rubber Co.

The polymerization plants will have an ultimate annual output of 90,000 long tons of Buna S rubber, enough for supplying the basic material for producing about 16,000,000 passenger car tires.

Gas Summer Air Conditioning Bulletin Published

Bulletin No. 18—"Gas Summer Air Conditioning" now available to the industry is the largest and most complete research publication yet issued by the American Gas Association Testing Laboratories.

This Bulletin summarizes two years' intensive study conducted under the supervision of the Joint Committee on Gas Summer Air Conditioning and its Technical Advisory Committee, which represent the Industrial and Commercial Gas Section and the Residential Section. The new Bulletin presents information of real value to all interested in the summer air conditioning field. It is especially timely in view of the importance of air conditioning to so many consumers and the rapid growth of this industry anticipated in the post-war period.

Opening with a short review of developments in summer air conditioning equipment for use with gas fuel, a description is given of contemporary models tested, these representing the products of three well known manufacturers. Complete results of numerous cooling capacity tests on four separate air conditioners are given in detail. These demonstrate clearly the flexibility of the systems examined under most field conditions usually encountered in practice. Their durability, substantial construction and safety of operation are also clearly shown.

From Laboratories' tests and information collected through the Committee and from other sources, operating costs of the systems examined are shown to compare favorably with competitive equipment using other forms of energy. Attention is directed to advantages offered by gas-fired units in providing year-round air conditioning as well as possibilities of better humidity control.

A special feature is provided by inclusion of a section entitled "General Air Conditioning Technology" contributed by one of the members of the Joint Committees on Summer Air Conditioning. This presents definitions of terms in common use, fundamental calculations and explanations of air conditioning processes. It may be secured in reprint form separately if desired.

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GAS CONTROL SINCE 1892

The Revolution in Industrial Heating

By
Frederic O. Hess, Pres.
The Selas Company
Philadelphia, Pa.

AT FIRST GLANCE this title is somewhat frightening. There have been so many big social, political and technological revolutions in our lifetime that it seems presumptive to use the same word as applicable to our own interest "Industrial Heating"—or more specifically "Industrial Gas Heating."

Restricting this observation to technical matters only we have experienced the revolution of the automobile; the revolutionary effects of ordinary electricity, and of its off-shoot "the radio." We are beginning to witness the revolution of the air plane; and we are being loudly—very loudly — acquainted with the forthcoming electronic revolution of all revolutions.

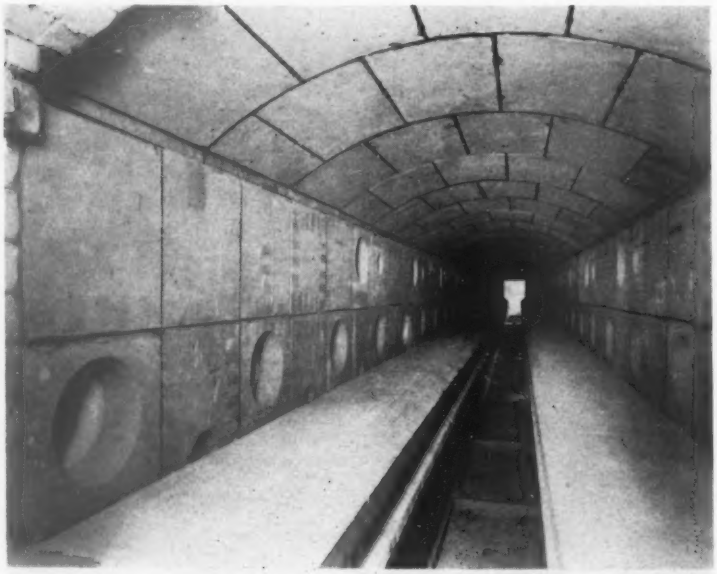
To justify and clarify this title let us take a look in dear old Webster. He defines revolution as "radical changes"—and upon further investigation we learn that "radical changes" are brought about by either external pressure or by internal developments. On that basis the title assumes a more appropriate meaning, because if we of the gas industry look about we certainly can see —we must see and recognize—some very radical changes.

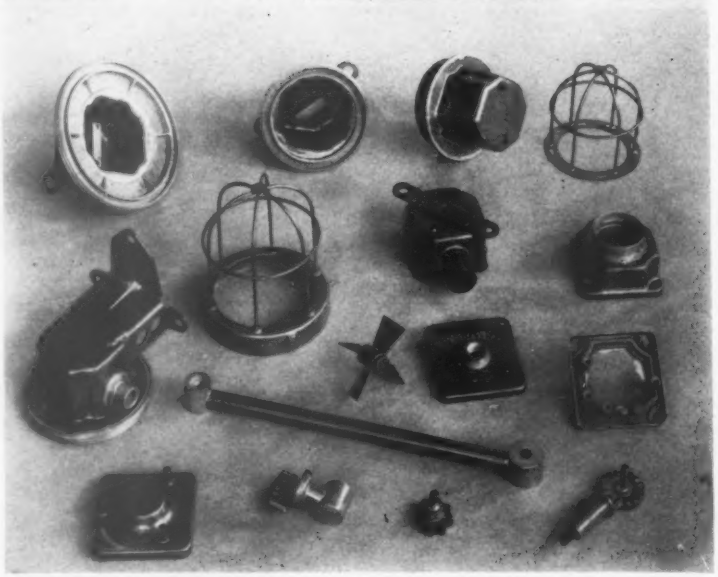
Let us briefly review and analyze some of these radical changes. Let us particularly project their effects—be they actual or only indicated.

When doing so we can, I believe, develop facts, which permit considerable optimism, provided we are prepared to take advantage of our opportunities—and if we are willing to adjust ourselves to the revolutionary obligations afforded us and imposed upon us.

One of the recent, important developments of radical effects has been the gas fired radiant tube as applied to furnace heating. This method of gas heat application has not only been defensive against the electric furnace and electric heating elements, but let us remember that it eliminated certain harmful chemical and physical effects of products of combustion upon the materials treated.

We have here a deliberate heat application—influenced in manner and scope by chemical and physical reactions, which were either eliminated or made possible. Unfortunately however radiant tubes have been limited to temperatures below 2000° F.—and this fact excluded a good many industrial heat applications—such as ceramic kilns, copper brazing and forging. Fortunately gas fuel as such is not limited, and the gas industry has some developments and substitute processes available which effectively compete and broaden the use of gas. Some radical departures in technique are necessary, and the following slides might effectively illustrate some of the departures from conventional practice which have been possible and which have been necessary to keep pace with the rapidly changing production techniques. Obviously these pictures are selected and intended to illustrate process changes and not apparatus design and construction:





Upper—Figure 1 Lower—Figure 2

1. This picture presents an internal

view of a porcelain kiln for glaze firing, after reconstruction or conversion from oil firing. Formerly this kiln utilized a muffle with all its handicaps of slow heat transfer—difficulty of temperature control—external combustion chambers and maintenance. The clean-cut internal construction is obvious, and in more than 2 years of use operation proved considerably more efficient than the previous firing method. Radiant firing plus accurate control of products of combustion appear responsible for successful glaze firing—an operation which heretofore seemed restricted to muffle kilns or electric kilns because — it was explained — of harmful chemical reaction of the products of combustion.

2. *Copper Brazing:* The high temperature required and the accelerated oxidation at those temperatures made the joining of metals by copper brazing an almost exclusive electric process. However the further development of low temperature brazing materials, improved technique and part design—an increased heat transfer by special gas burner designs—expand a manufacturing and assembly process so far claimed by competitive fuels — electricity and oxyacetylene. The process of brazing might seem old, but let us not under-estimate the important advances of this technique. Promoted by war production, this production heat process will—and is—influencing post-war planning and post-war products. This slide illustrates a variety of parts assembled by brazing—the average time being less than 1 minute, and gas as fuel having proven ideal for continuous line production on a fully or semi-automatic basis. Many of these parts used to be castings requiring machining—or were made in an entirely different manner on a considerably costlier basis.

3. Another illustration of brazing operation is shown with this picture of a tool bit. It's only a tool bit—but it has caused a production revolution and is indispensable for today's production demands. Tungsten Carbide changed the machine tool industry and is used in practically practically every machine shop—but industrial gas has hardly been applied in this every day operation of brazing the bit to the holder —infact the manufacturers of the tools have recommended (in the past) either induction heating or oxygen and acetylene. Yet industrial gas has many advantages—the heat can be localized in contrast to induction heating, and less hazard exists of damaging the tool by overheating.

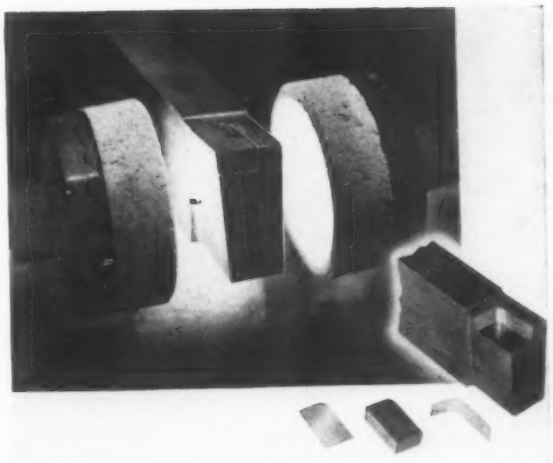


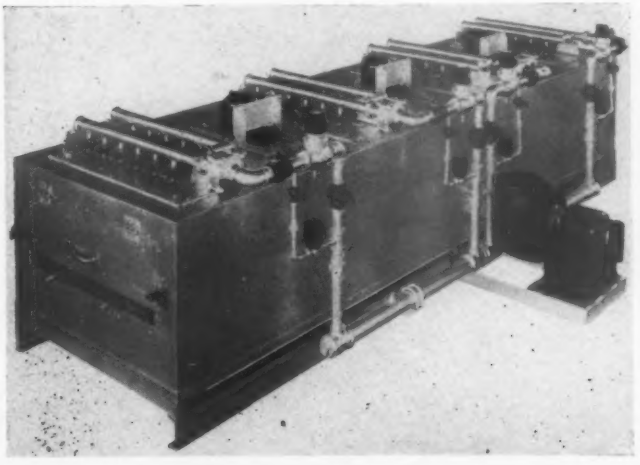
Figure 3

4. Another example of a revolutionary change in processing of materials can be illustrated by this slide of a printing press. Letter press printing is an old art — but had reached very serious limitations until physical chemistry changed the picture. A natural process of oxidation has been supplanted by vaporization and polymerization—both accelerated by heat—but controlled heat of an intensity so far not duplicated with any other fuel. 1,250,000 Btu hr. are necessary to perform what might now be called the chemical process of printing—at a speed of 1,000 ft. per minute—This is a striking illustration of revolutionary changes in industrial heat applications requiring highly special equipment at fairly high cost, and an intimate knowledge of the printing technique and the process requirements.

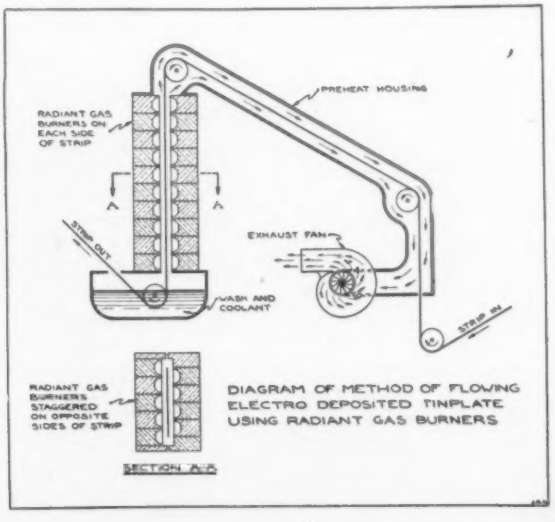
Figure 4

5. A similar change — brought about by deliberate physical chemistry—hit the paint industry. New industrial finish fostered short curing cycles, and with it electric radiant lamps. This radical departure from old practices calls for a radical re-

Below—Figure 5



Right—Figure 6


PREHEAT HOUSING
RADIANT GAS BURNERS ON EACH SIDE OF STRIP
A
A
STRIP OUT
EXHAUST FAN
WASH AND COOLANT
STRIP IN
RADIANT GAS BURNERS STAGGERED ON OPPOSITE SIDES OF STRIP
SECTION A-B
DIAGRAM OF METHOD OF FLOWING ELECTRO DEPOSITED TINPLATE USING RADIANT GAS BURNERS

vision of gas ovens and drying methods or practices. In order to take advantage of these changes in the paint industry we must fully utilize all the fuel advantages of gas, and we must study characteristics of the process in order to coordinate it with the fuel to the full advantage.

Here is an experimental oven for the drying of a special product in less than 2 minutes—against a previous cycle of 20 minutes. In this case the processing material had not been changed, but the investigation of the drying process brought about the shortening in cycle, resulting in an installation many times the size of this experimental unit.

Metal finishing, wood finishing, plastic coatings, drying,—are all undergoing radical revisions—they are changing from shop techniques to laboratory controlled processes. The curing or heating techniques required and demanded can no longer be crude —and that is one reason why electric lamps and high frequency short wave induction current have appeal. The changes in the paint and drying industry must make us realize that the time of the "hot box" seems over, and if we are not keeping pace with the changes in materials and processing, the industrial finishing and related industries will proceed and speed up without us.

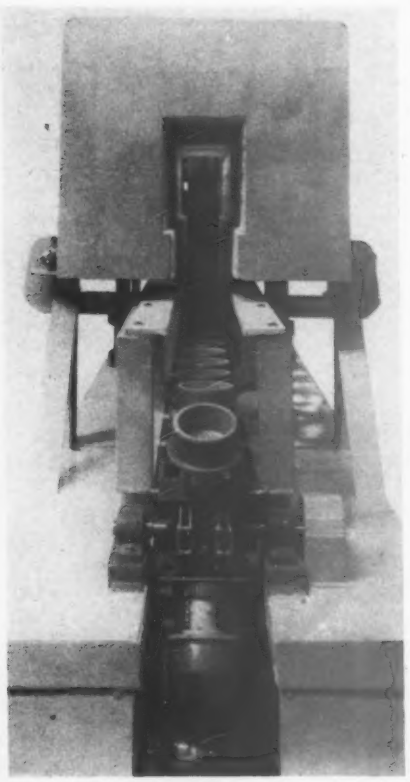


Figure 7

6. Another revolutionary process change is now being promoted for tin conservation, but has very much broader implications. While formerly tin plate was made in the hot-dip process—which consumed large quantities of gas for firing the tin pots—the new electrolytic application of tin on strip and the subsequent fusion of the tin to the steel by heat —has been claimed by induction, as well as resistance heating—and this method of heat application has found extensive support by the various Government agencies.

Here is the beginning of a radical departure from an old established process, involving—in peace time—more steel tonnage than any other American industry—except the automotive industry—and consuming millions of cu. ft. of gas every day. The new process requires heat—just about as much heat as the dip process —but applied differently. Diagrammatically illustrated here is an installation utilizing radiant gas heat for tin fusion—and as in many other cases gas offers a wider control range —a greater flexibility—and it can be applied at a considerably lower investment as well as operating cost. It might be interesting to note that the advocates of induction heating claimed that the reflective qualities of electrolytic tin plate would prevent the successful application of radiant heat—while as a matter of fact electrolytic tin presents a rough, porous surface, and therefore an ideal absorbent for radiant or convection heat.

Even though the foregoing slides illustrate some radical changes—the real revolution in industrial heating seems to take place in the metals heat treating field. You are undoubtedly familiar with induction heating and the nationwide, aggressive application and sales campaign by the electrical industry — somewhat less familiar perhaps with the extensive promotion of induction heating by the Government — and possibly still less familiar with the position of the gas industry and the broad implications of this metallurgical—and again physical—chemical revolution.

Extraordinarily short and rapid heating times by induction heating upset certain prevailing ideas about heating rates of metals. However it was concluded this was due to electronic heating, which permitted different heat transfer than obtainable with other methods. Gas heat represents one of these other methods—but fortunately it has not been superseded—nor can it be counted out. On the contrary—gas seems to be in

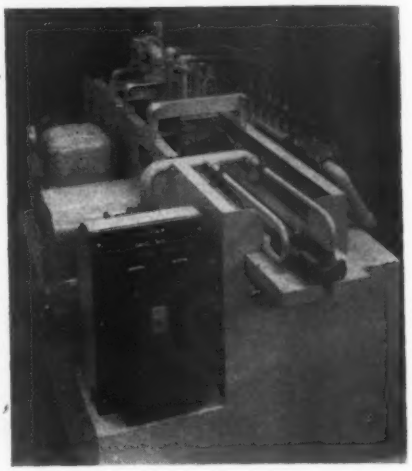


Figure 8

an excellent competitive position and destined to take part—and even pioneer—in this heat treating revolution, if we are willing to depart from conventional practices and consider text-book and old established operating principles (as 1″ per hour heating rate, etc.) "obsolete." Let us look at some examples for such defying and optimistic statements:

7. Here is a view through a continuous automatic annealing machine, annealing ¼″ wall steel tubing localized 4″ from the top down—in 2 minutes, and regularly producing a full anneal.

8. This might be justifiably described a machine tool for heat treating. The unit was designed to automatically flame harden the top ¼″ of a solid steel bar 1″ square—which forms the tread of a tank grouser. The equipment is push-button operated, and has a production rate of 1 grouser every 55 seconds — which calls for a heat transfer rate sufficiently high to melt the solid steel bar if it is exposed to the burner equipment—for a total time of 2 minutes.

Competitive electric induction equipment could produce the same surface hardened bar in about the same time—but the equipment would have involved approximately 4 to 6 times the cost of gas equipment. Comparable fuel costs are also in a ratio of 1 to 4 in favor of gas.

9. A production machine for heat treating such Armor piercing Shot would appear similar to the unit shown here. This particular machine is being used for base drawing 37 M/M Shot — hardened by the salt bath method — but almost identical equipment with the addition of a spray quench can be utilized for hardening 37 M/M Shot — and a slightly larger unit for 75 M/M or even 105 M/M Shot.

Figure 9

This means that a single-line conveyor unit having an overall length of approximately 30 ft. is capable of hardening about 300 75 M/M Armor piercing Shots per hour—while for similar production approximately 22 single-coil or 6 quadruple-coil induction units would be required. Such comparisons seem to confirm the contention that gas is in a competitive position.

10. A somewhat more severe heat application is shown by this diagram which illustrates the method of surface hardening a center portion of a section of 18" thick armor plate to a depth of 7"—10 times faster than the present practice. In addition to this reduced heating time definite metallurgical advantages are obtained which can however not be subjected to discussion at this meeting.

We have seen here but a few examples of radical industrial process changes. There are numerous other examples of rapid heat transfer or heat treatments: 1/16" thick wall stainless steel tubing is being fully annealed in 5 seconds.

The welded section of 1/8" wall steel tubing is being annealed in 10 seconds—or at the production rate of 40 ft. per minute—in such a manner that it is difficult to detect a metallurgical difference — even on micro - photographs — between the original metal and the weld.

There are many other applications —and the localized heat treatments as well as the increased rates of heat transfer show equally striking differences in the non-ferrous industry. Traditions are being broken — but that's what revolutions usually do. The implications of these changes are of course immense. The heating method is exceedingly flexible and so is the equipment—practically no heating-up time is required—comparable to induction heating — but in contrast to furnaces.

The ability of performing localized heat treatment reduces the hazard of warpage and permits retaining original metallurgical structures wherever desirable.

Heating times are reduced with beneficial effects upon work in process, and equally beneficial effects upon the work piece by reducing the scale and decarburization. The extent of both scale and decarb, is not only a function of atmosphere, but very much a function of time.

Differences — and in many cases desirable differences—in metallurgical results are being obtained. Grain growth is being influenced and can be somewhat better controlled because of the shorter heating time.

It is obvious that these different heating cycles — permitting different methods of handling materials—the flexibility of operation and the relatively small size of high production units—will revise manufacturing methods and will revise production and products.

So much for the technical results and implications of the revolutionary changes in heating practices and techniques. I hope you agree that gas fuel is in an excellent position to take part in this radical transition in heating methods—but to be fully successful certain radical changes should be self-imposed within the gas industry.

We have seen that practically all *processes* in industry which effect industrial heating are becoming more and more technical — and that the changes are largely brought about by advances in applied physical chemistry. We also know that gas is used not only as a fuel but as a chemical agent. Consequently special studies are required, and a thorough, intimate knowledge of the process is needed. The product as well as the characteristics of the fuel and its effects have to be thoroughly investigated. The industrial gas period revolving around a piece of pipe and a pile of brick seems to be definitely doomed.

Maybe we can make the comparison that the gas industry will have to undergo the transition period passed through by the radio industry when changing from the crystal sets to the modern radio. Certainly there will always be field construction and self-help—but some of the elements required for these new heating techniques will be just as special and unsuited for construction by the average shop or gas man as the modern radio tube is unsuited for construction by the average "ham"—and he is a very valuable part of the radio industry.

We have not heard in our travels of any electric current salesmen building or designing for the customer an electric induction unit. Nor is it general practice that industrial plants construct their own electric furnaces or electric heating equipment—quite in contrast to past practices prevailing in the gas industry.

Obviously these remarks are an appeal for the support of the industrial gas equipment manufacturer—and it seems such support might be justifiable and beneficial to the entire industry. The gas industry is an old industry, and it does not seem plaus-

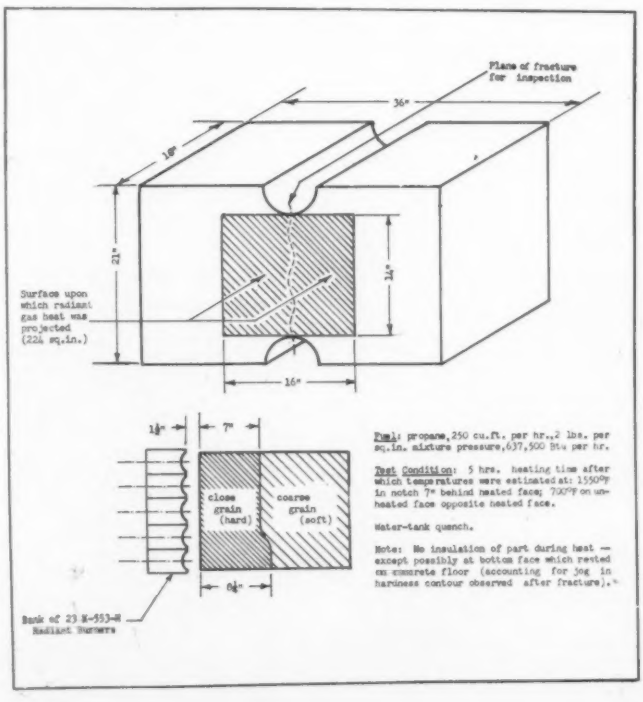

Plane of fracture for inspection
36"
18"
21"
14"
16"
Surface upon which radiant gas heat was projected (224 sq.in.)
1½"
7"
close grain (hard)
coarse grain (soft)
0½"
Bank of 23 M-553-M Radiant Burners
Fuel: propane, 250 cu.ft. per hr., 2 lbs. per sq.in. mixture pressure, 637,500 Btu per hr.
Test Condition: 5 hrs. heating time after which temperatures were estimated at: 1550°F in notch 7" behind heated face; 700°F on unheated face opposite heated face.
Water-tank quench.
Note: No insulation of part during heat — except possibly at bottom face which rested on concrete floor (accounting for jog in hardness contour observed after fracture).

Figure 10

ible that out of the many good gas engineering organizations of the past —none has been able to grow to a size sufficiently large to afford a research expenditure of $100,000 and more on a promising project, such as a gas combustion turbine. But almost everyone agrees that a successful power generating unit of that type would find wide application and many uses.

Another essential change within the gas industry involves the attitude of the average gas company towards industrial gas and the industrial gas department. If industrial gas heating is to keep pace with the rapid advances of techniques and other heating methods, industrial departments will have to be larger and receive considerably more support from the management to do justice to customers—to processes—and to the Nation as a production center. Industrial gas men will have to be of high caliber—which automatically means that sufficiently high salaries have to be paid to attract the caliber man required for the task.

Maybe industrial gas at this moment does not represent as large a percentage of the gas load as cooking or home heating has provided—but did industrial gas not have to take over the baking load when the shift took place from baking at home to baking in industrial plants on a production basis? Such transitions can happen again.

Suppose the trend towards central plant heating is revived after the war —would not industrial gas be called upon to replace the home heating load in central heating plants?

Are we not witnessing now a revolutionary change in food and food preparation—and promptly industrial gas can and is being called upon to assist in the growing production of dehydrated foods.

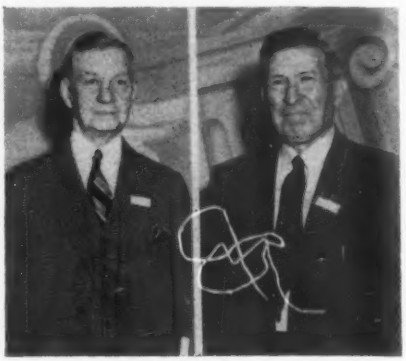
To retain and improve the position of industrial gas will not only require extensive efforts, enthusiasm and careful planning, but also progressive and *supporting policies.*

Industrial gas has proven its importance, beyond any doubt, during the past few years, and has made many substantial contributions towards production—quality—and the future. Let us hope we are foresighted enough to take care of the future—so the future will take care of us.

Presented at the Annual Meeting American Gas Association, Industrial and Commercial Gas Section, St. Louis, Mo., October 26th, 1943.

Natural Gas Oldtimers

Two veterans of the natural gas industry, Clifton W. Sears of Pasadena and Maurice W. Walsh of Detroit were elected honorary members of the natural gas section of the American Gas Association.



Maurice W. Walsh (left) and Clifton W. Sears

The distinction of being the first to be elected honorary members of the natural gas section was in recognition of Mr. Sears' and Mr. Walsh's more than thirty-five years of outstanding service to the natural gas industry and in appreciation of their effective cooperation in organizing the Natural Gas Association of America in 1906.

Gas Air Conditioning On Display

Servel, Inc., Evansville, Ind., has a specially designed display of Servel all-gear gas air conditioning at the showroom of The Laclede Gas Light Co., St. Louis, Mo. All the delegates attending the A.G.A. annual convention were invited to visit the showroom and look over the exhibit. A large number of them did, and came away convinced that gas air conditioning will take a prominent part in after the war gas company sales plans.

Grand Home Appliance Co. Succeeds Cooperative Stove Co.

Announcement is made by James Mitchell, President of Cleveland Co-Operative Stove Company, that the company's manufacture of Grand Gas Ranges, and other home appliances now in the planning stage for postwar development, will be carried on under the name of Grand Home Appliance Company.

Grand Home Appliance Company will operate the present range factory in Cleveland, with David L. Edelmuth continuing in charge of sales and promotion activities.

The Cleveland Co-operative Stove Company, which has been engaged in war production since before Pearl Harbor, was founded in 1866 by a group of iron molders just returned from the Civil War.

Though originally a co-operative enterprise, the company was incorporated in 1867. In those days, the stoves were made of heavy cast iron, and the weight and difficulties in transportation made it necessary for the existence of a large number of small manufacturers to serve limited nearby areas. As modern gas ranges developed, greatly reduced in weight, Cleveland Co-Operative Stove Company was among the pioneers in their development.

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RECENT COURT DECISIONS
Affecting Gas Utilities

Liability for Contract Breach

By
Leo T. Parker
Attorney at Law
Cincinnati, Ohio

THE LIABILITY for breach of a contract for sale of gas is important to all readers. Many unusual points of law on this subject were decided by higher courts. And we shall review these decisions.

Doubtless a majority of readers believe that if one contracting party breaches a gas sale contract the other party is immediately and automatically relieved from all liability and obligations assumed under such contract. Sometimes this is true, but not always.

Generally, when a seller refuses to perform in accord with the provisions of a gas sale contract the purchaser may acquiesce in the repudiation. Thus the contract is terminated but the seller can be held liable in damages. On the other hand, if the purchaser so chooses he may elect to treat the agreement in full force and effect, sue to and have his legal rights adjudicated. See Roehm O. Horst, 178 U. S. 1. at page 11, 20 S Ct. 780, 44 L (2d) 953.

Another important point of law is that if the party who is not in default induces the adversary to continue performance of the contract the former is not permitted later to alter his position, or to claim that the contract is discharged afer the original party in default has been induced to alter his position.

In other words, if a contracting party breaches a contract and subsequently acts in reliance upon representations of the other party the latter cannot alter his position. Stated otherwise, if the seller breaks the contract and the purchaser insists upon continuing performance, the purchaser can not elect to treat such breach as a discharge.

For illustration, in Kentucky Gas, 129 Fed. (2d) 17, the testimony disclosed that two gas companies entered into a written contract by the terms of which the seller agreed to sell and the purchaser agreed to purchase at 30 cents per unit at least 500 cubic feet of natural gas for each 1000 cubic feet of manufactured gas sold to its customers. The purchaser to this contract has customers to whom it was furnishing manufactured gas, and the natural gas was used for the purpose of producing the manufactured gas.

Several months later the seller advised the purchaser that it had elected to terminate the contract because of alleged misrepresentations, and also because the agreement violated the Anti-Trust Act. The purchaser filed suit and asked the court to grant an injunction to prevent the seller from refusing to furnish gas, insisting that the agreement was in full force and effect. Shortly later, the seller informed the purchaser that it would continue to furnish gas as provided in the contract but not "at the low price stated therein but at our regularly established rates now prevailing." The suit was withdrawn and from that time until more than two years later the seller supplied gas, billing the purchaser at the rate of 35c instead of 30c price specified in the contract. The purchaser paid for all gas reecived at 30c per unit, and the difference of 5c per unit debt accumulated.

However, sometime *after* the seller had refused to deliver the gas at the 30c per unit contract price, and during the controversy over payment of the 5c difference between the contract price and the new price demanded by the seller, the purchaser failed to take the minimum requirements by a total of 181,982 units. In other words, the purchaser did not, as originally agreed, take 500 feet of natural gas for every 1000 feet of gas manufactured and sold to its customers.

The seller filed suit to recover from the purchaser damages based upon the latter's failure to take the minimum requirements at 30 cents per unit.

During the trial the purchaser contended that the seller was not entitled to a judgment because such seller was not ready, willing and able to deliver gas upon the terms specified in the original contract.

However, since the purchaser had not at any time treated or considered the original contract other than in full force, the higher court held the purchaser fully liable in damages to the seller for failure to fulfill the terms of the contract and accept and pay for 500 feet of natural gas for every 1000 feet of manufactured gas sold and delivered to its customers. This court said:

"We think defendant (purchaser) is in no position to complain. It had a contract which it claimed was in full force and effect and performance of which it insisted upon . . . . Inasmuch as defendant (purchaser) had not prior to that time brought action for non-performance but had insisted upon performance and had not materially changed its position in reliance on the attempted cancellation, the act of plaintiff in attempting to repudiate was nullified . . . . We think the court properly found that the contract remained in effect that each was bound by it, that plaintiff was entitled to recover for gas furnished at the stipulated price of 30c per unit and that defendant (purchaser) was bound to take the minimum amounts it had been agreed to take."

So, therefore, where there is an actual breach of a contract either party will, if he insists on performance keep alive his own obligation to continue with performance of the original contract. The legal result is that the party who breached the contract, even though having in the interval done nothing in reliance on a continuance of performance may, if he sees fit, require the other party to fully perform the original contract.

Implied Contracts

An implied contract is equally as effective as an expressed contract. However, modern higher courts hold that the law never implies a promise against the expressed will of a party sought to be charged. As the law will not imply a promise, where there was an express promise, so the law will not imply a promise of any person against his own expressed declaration, because such declaration is repugnant to any implication of a promise. See, Whiting v. Sullivan. 7 Mass. 107; Earlr v. Coburn, 130 Mass. 596; and Jewett v. Somerset County, 1 Me., Greenl., 125.

Therefore, to justify a recovery of damages upon an implied contract it is necessary to establish facts from which a promise to pay a certain sum of money for gas can reasonably be presumed.

For illustration, in Board of County Com'rs of Seminole County v. Southwest National Gas Company, 138 Pac. (2d) 525, reported July, 1943, it was shown that the Seminole Gas Company sued the county to recover on an implied contract for a proportion of gas which had been furnished to the municipal building of the City of Seminole during the years 1936, 1937, 1938 and 1939, and in which building the county housed the Superior Court, Court Clerk, and Assistant County Attorney and a member of the Board of County Commissioners.

The county denied that it had either expressly or impliedly contracted for the gas furnished the building or any portion thereof or that it had agreed to pay therefor, and alleged that on the contrary it had from the inception of any claim by the gas company and its predecessor denied liability.

In refusing to hold the gas company entitled to recover payment for the consumed gas the higher court said:

"Before recovery could be had (gas company) plaintiff had the burden of first establishing either an implied or express contractual liability. Under the record here submitted it definitely appears that the defendant (county) never assumed any obligation to pay for any portion of the gas which plaintiff or its predecessor was supplying to the municipal building. . . . It could not continue to voluntarily furnish gas with the expectation of collecting from the county when the county was at all times openly and actively refusing to assume liability for same and then claim an implied contract with the county."

Another important point of law was decided by the higher court in Suburban Gas Company v. Mollica, 32 Atl. (2d) 463, reported May, 1943. This court held that where a large sum of money is to be forfeited as damages in event of any breach of a contract the sum to be forfeited is an unenforceable "penalty." This court said:

"It is well settled that where the sum fixed as damages is applicable to more than one stipulation in the contract and where the stipulations vary in importance, it is a penalty, without regard to whether it would have been a penalty if applied only to the single breach in question."

Breach Law

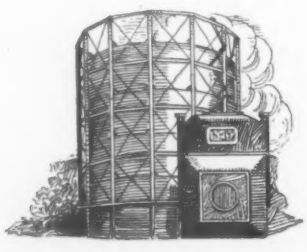
See Meyer Co. v. Baker (1931) 328 Mo. 1246. This court went so far as to hold that it is a principal of general law that when a contracting party breaches a gas sale contract and does not alter his position, in reliance upon the apparent intention of the other party to treat the contract void, the party not in default may change his position and treat the contract as discharged, or he may recover damages from the party in default.

It seems, however, that this latter explained law is not wholly consistent with the legal principle that where a contracting party breaches a contract the innocent party must elect whether to go on with the contract or terminate it. Therefore, if the principle of law stated by the court in Meyer Co. v. Baker were applied without qualification one might stand indefinitely upon his right of election. Moreover, he may excuse it one way or another at any time he might subsequently see to his advantage, if in the meantime the party in default had not altered his position in reliance upon the "apparent intention" of the other contracting party.

Both Parties at Fault

Another important point of law is that where both parties to a gas sale contract breach the contract, and neither insists that the contract should be terminated, both parties are obligated to perform the obligation assumed in the contract.

For illustration, in Dibrell, 294 S. W. 645, it was shown that a purchaser sued a seller to recover for breach of a contract to sell and deliver commodities and sublease to him certain land. The seller proved that the purchaser had, also, breached the contract.



It is important to know that the higher court held that since the negotiations occurring between the parties showed that each had claimed a breach by the other and neither had acquiesced in a termination of the contract, the contract was to be treated as not having been breached by either party.

And again, in Pratt v. Freeman, 115 Wis. 648, it was disclosed that the seller defaulted and failed to produce and offer delivery of the subject of the sale within the time agreed. This higher court held that the insistence of the purchaser, which continued over a period of several months, that the seller fulfill the terms of the contract resulted in the purchaser being liable in damages for failure to fulfill the contract.

Anticipated Breach

Modern higher courts hold that a purchaser may treat the seller's notice of intention to breach as inoperative, and without legal effect. This is known as an anticipatory breach. The purchaser may await the time when the contract is to be executed, and then hold the seller responsible for all the consequences of nonperformance. However, under these circumstances the purchaser keeps the contract alive for the benefit of the seller as well as his own. Moreover, the purchaser remains subject to all obligations and liabilities under the contract.

Therefore, under ordinary circumstances, one who has committed an anticipatory breach may enforce the contract against the innocent party. And if notwithstanding an actual breach the party not in default insists that he will hold the other to performance, the latter may agree that the original contract is in force. Under these circumstances both the buyer and seller are bound to conform with the terms of the original contract.

It is familiar law that where one of the parties to a contract repudiates it prior to the time fixed for performance by him or, after each time has arrived, he breaches or repudiated the contract the other party may elect as between certain substantive rights. He may elect to waive the breach as ground for rescission, or termination of further performance, and may accordingly demand performance.

Goggles For Safety

A Campaign Conducted by Southern California Gas Company

By
Fred A. Herr

IN LINE with its policy of conducting company safety programs to meet seasonal increases in workers' hazards and to sponsor special drives to combat occupational dangers in which there appears to be a serious current upward trend, the Southern California Gas Co. of Los Angeles recently conducted a "Goggle Month" campaign in an effort to reduce eye injuries to workmen by emphasizing the need for wearing goggles, hoods or shields on all jobs on which the eyes of a worker might be exposed to injury.

The importance of the campaign, which was held during the entire month of June, was indicated by statistics compiled by the firm's safety engineers which indicated a sharp increase in eye injuries and lost time due to such accidents.

The statistics disclosed that the total number of lost-time eye injuries suffered by workers had increased more than 100% in 1942 as compared with 1939 and 1940, and that the number of work days lost due to eye injuries had suffered a corresponding increase during the same years.

The Goggle Month program was held under the joint direction of a Labor-Management Committee of the company's central division. Active on this committee were General Agent R. R. Blackburn and W. R. Davis, representing the management; and G. F. Bloss, Claude Williams and O. G. Peters, representing Local No. 132 of the Utility Workers Organizing Committee.

Assigned to carry on the actual work of the campaign were E. E. Ellis, head of the company's safety department; Albert W. Turner, a safety engineer in Ellis' department; and R. J. Vondrasek, representative of the Union.

Intra-Company Educational Campaign

A comprehensive intra-company publicity campaign was conducted by the committee to impress on all operating men the necessity for using eye-protective equipment on all hazardous jobs. The barrage of educational publicity included the use of posters and bulletins displayed in work shops, division offices and other spots where they would come to the attention of workmen; and cartoons which stressed the need of eye-protective equipment and demonstrated pictorially how eye injuries occur by failing to wear goggles, hoods or shields.

A series of meetings was also held in which company officials and committee members, department foremen and Union representatives emphasized the need of wearing goggles and safety-first measures. There were also a number of on-the-job meetings at which deficiencies in the safety field were pointed out to workers.

The Utility Workers Union cooperated effectively with the management by having Union stewarts make check-ups every few days during the drive to see that the workers continued to use goggles on all hazardous jobs.

An appeal prepared by the Labor Management Committee and distributed to all employees solicited individual cooperation of all men and women workers. The appeal read:

"The Committee asks each individual to do his part by attending to his own particular case. This means simply that if a job presents an eye-hazard, then goggles—or other protection, such as hoods, shields, helmets, etc.—should be worn. The protective equipment is furnished by the company."

The committee suggested further that each operating man appoint himself a sub-committee of one to prevent accidents.

Six "Musts" for Goggles

Given wide publicity throughout the gas company's organization for the duration of the campaign were six occupational "musts" for goggle wearing, including:

LAW OF AVERAGE GREMLINS
OH! BOY!— WATCH ME PUT THE NEXT ONE RIGHT IN HIS EYE
LOOK, OSWALD! A SITTING DUCK
DON'T ASK FOR IT!
PROTECT YOUR EYES WITH GOGGLES

During all grinding operations; while using all types of pneumatic tools, including concrete breakers, spades, tampers, drills, etc.; while welding or assisting a welder; while engaged in chipping pipe overhead; while driving steel or iron bars or hitting chisels; while working on leaks where the hazard of flying particles is apt to exist.

The main purpose of the Labor-Management Goggle Month program, according to Safety Director Ellis, was to help prevent accidental injuries to the eyes of workers, thereby increasing the total available man hours of work the Southern California Gas Co. can contribute to the war effort.

In the course of the Goggle Month educational series, workers were told that in American industry in general some 300,000 eye injuries occur annually, which cost the employers approximately $200,000,000 a year. In on-the-job meetings, the committee submitted data assembled by the National Society for the Prevention of Blindness which show that 98% of industrial eye accidents can be avoided by proper precautions.

An entire show window in the company's Flower St. headquarters building in Los Angeles was devoted to an impressive display of safety equipment used by the company. The exhibit included dozens of mechanical aids against injury, plus two large panels of photographs showing workers acting out scenes which demonstrated the safe and the dangerous way of performing a job.

Concurrent with the "Goggle Month" program for prevention of industrial eye accidents, the Southern California Gas Co. called the attention of other employees to the need of saving their eyes. In data pre-

pared for distribution to all company personnel, Albert W. Turner of the safety department pointed out that while eye protection for industrial workers had its inning during Goggle Month, office workers, too, should be interested in saving their eyes. Turner emphasized the dangers of uncorrected visual defects, the symptoms of poor vision and various ways in which eye strain can be avoided.

100% Cooperation in Drive

While the results of the Southern California Gas Co.'s Goggle Month program cannot as yet be measured in terms of actual percentages showing reduction in eye accidents, Safety Director Ellis declared the campaign was an unqualified success from the standpoint of cooperation and the enthusiasm with which the employees collaborated with the Labor-Management Committee's efforts to reduce accidents.

LESSON NO.1 IN HOW TO LOSE AN EYE! THE RUGGED INDIVIDUALIST.

"The campaign definitely was successful in that it emphasized to the workers the need and the importance of wearing safety equipment on hazardous jobs," Ellis said. "It pointed out to them the various types of work on which the workers would serve their own best interests by wearing goggles, shields or hoods. The degree of the success of the drive can only be measured later on when we see to what extent the safety measures advocated in the campaign are reflected by the number of workers who continue to wear safety equipment on dangerous jobs."

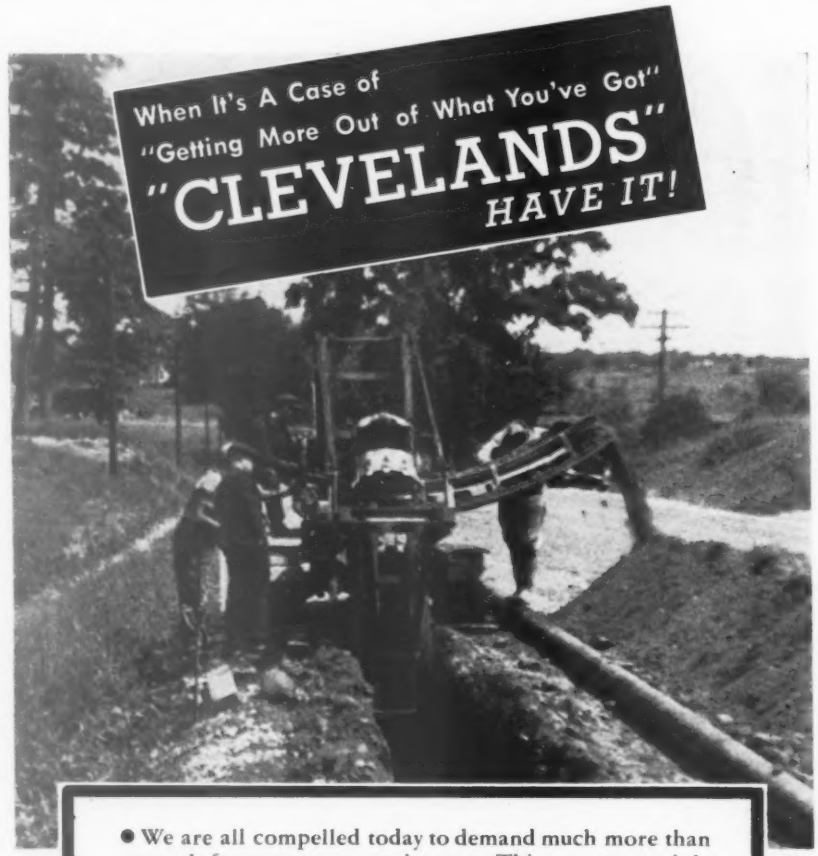
As part of its month-long campaign to educate workers to avoid carelessness on the job, the Southern California Gas Co. used a series of serio-comic cartoons which were displayed on bulletin boards in shops and offices and published in the firm's house organ.

The two cartoons shown here illustrate two of six occupational "musts" for which the company recommends the wearing of goggles—grinding operations; and driving steel or iron bars which may throw off chips that might cause eye injuries.

Worthington Pump Gets Maritime Award

Rear Admiral Howard L. Vickery, vice-chairman of the United States Maritime Commission, presented the Maritime "M" for excellence in war production on October 13th to the Worthington Pump Company, which has been supplying pumps for most of the ships in the new Victory Fleet.

To 5,000 men and women employees of the plant, who witnessed the presentation, Rear Admiral Vickery said, "No other phase of war production has done more to turn the tide against our enemies than the tremendous output of American merchant shipyards." The award was accepted, on behalf of the plant, by Hobart C. Ramsey, company vice-president in charge of operations, who, like Rear Admiral Vickery, was graduated from Annapolis with the Class of '15.



● We are all compelled today to demand much more than normal from present equipment. This most certainly applies to trenchers for the demand for emergency work on existing and new lines is heavy.

Because of their superior rugged construction, correct design, speed, flexibility and power, CLEVELAND owners have found that their CLEVELANDS have met this increased load. Records show that CLEVELANDS have had the stamina, to stand up under the toughest going day after day delivering maximum trench footage at minimum cost and with minimum times out for repairs.

When the going gets tough you can depend upon your "CLEVELAND".

THE CLEVELAND TRENCHER COMPANY
20100 ST. CLAIR AVE. "Pioneer of the Small Trencher" CLEVELAND, OHIO
"CLEVELANDS" Save More . . . Because they Do More

War Production Board and Other Administrative Orders

Part—4500 Power, Water, Gas and Communications

[*Utilities Order U-7 (Formerly Limitation Order L-31)*]

NATURAL GAS

Whereas, increased gas requirements for war production and civilian uses, coupled with scarcity of materials for the construction of pipelines and other facilities, have resulted in shortages of natural gas in certain areas of the United States and are threatened in others; during periods of adverse weather conditions the demand for natural gas in almost all areas increases beyond the capacity of existing facilities to meet such demands; and the following order is deemed necessary to conserve existing reserves of natural gas and to safeguard deliveries to war industries and essential civilian services, and in other respects is necessary and appropriate in the public interest and to promote the war effort:

Integration of gas system operations. (1) Each utility or non-utility supplier shall, as far as practicable, so operate and maintain its transmission, storage, distribution and gas manufacturing facilities as to achieve maximum deliverability of natural gas in any area or areas in which a shortage exists or is imminent and to conserve existing gas reserves; and no utility or non-utility supplier shall abandon any such facilities except upon specific authorization of the War Production Board. Where necessary for such purposes, the War Production Board may, from time to time, issue specific directions as to the operation of gas manufacturing, transmission, storage and distribution facilities.

(2) Each utility or non-utility supplier shall maintain in operating condition all gas manufacturing facilities owned or operated by such utility or non-utility supplier which were in operating condition on November 12, 1942. Each utility or non-utility supplier shall repair and maintain in operating condition such other facilities including gas manufacturing facilities owned or operated by such utility or non-utility supplier as the War Production Board may, from time to time, direct. Wherever repair and maintenance of gas facilities requires the use of materials in excess of those available under any order issued by the War Production Board, application for authority to use or acquire such materials should be made to the War Production Board in accordance with established procedures.

(3) The War Production Board may, from time to time, issue specific directions respecting the delivery of natural gas from one utility or non-utility supplier to another or to any consumer, and respecting the interconnection of any facilities; and no utility or non-utility supplier shall deliver or accept or fail to deliver or accept deliveries of gas or fail to interconnect facilities in violation of any such direction. Subject to such directions and to the provisions of paragraph (b) 5, each utility or non-utility supplier shall so interchange natural gas with its interconnected utilities or non-utility suppliers as to achieve, directly or indirectly, the maximum deliverability in any area or areas in which a shortage exists or is imminent.

(4) Upon specific direction of the War Production Board, utilities or non-utility suppliers shall curtail gas deliveries to specified classes of consumers on their systems if necessary in order to make available gas for delivery to utilities or non-utility suppliers on whose systems there exists a shortage which adversely affects or threatens service to war producers or other essential consumers. Any utility or non-utility supplier may request the War Production Board to direct another utility or non-utility supplier to deliver gas to it, on the ground that such delivery will safeguard service to war producers or essential consumers, or will otherwise be in the interest of the war effort.

(5) No utility shall deliver natural gas to any other utility or non-utility supplier not theretofore regularly supplied by such utility (except emergency deliveries to relieve a shortage resulting from the failure or breakdown of gas production, transmission or distribution facilities), without specific approval of the War Production Board. Any utility making such emergency deliveries shall report directly to the War Production Board, Office of War Utilities, Natural Gas Division, Ref.: U-7, the nature of the emergency and the amount and duration of such deliveries.

(6) Each non-utility supplier in any area served by any utility with which such non-utility supplier is interconnected or is capable of being interconnected, shall upon notice from the War Production Board so order its operations as to make available to such utility, or to any essential war producer or other consumer, all natural or manufactured gas which it is capable of producing or supplying in excess of the minimum requirements of its own essential operations. Any non-utility supplier which on October 1, 1943 was supplying natural gas to a utility in an area in which a shortage exists or is imminent shall not discontinue deliveries to such utility without the approval of the War Production Board, unless it is no longer capable of making such deliveries, or pursuant to the provisions of paragraph (c) (1).

(c) *Operations during gas shortages.* (1) In the event of an existing or imminent gas shortage in any area, each utility or non-utility supplier supplying such area shall conduct its operations and reduce deliveries to commercial and industrial consumers in accordance with the following schedule, subject to such further or special directions as the War Production Board may from time to time issue: *Provided*, That to the extent, if any, required by the emergency nature of the shortage such utility or non-utility supplier may, in the first instance, reduce deliveries without regard to such schedule, but shall, as soon as possible thereafter, readjust its operations and deliveries to conform in all respects to such schedule during the continuance of the gas shortage period. The utility or non-utility supplier shall:

(i) First, within the limit of contractual rights, reduce deliveries to all consumers purchasing natural gas under contracts permitting the supplier to interrupt deliveries: *Provided*, That deliveries of gas neces-

sary for the maintenance of the war production and essential civilian services listed in Exhibit A, as the same may be amended from time to time, shall be reduced only to the extent that the fuel requirements for such production and services can be supplied from the consumer's standby facilities: *And provided,* That deliveries shall be maintained to any consumer to the minimum extent necessary to prevent permanent damage to production and service facilities, except that such deliveries shall be interrupted under paragraph (c) (1) (v) below.

(ii) Second, if such action has not previously been taken, operate utility's or non-utility supplier's standby gas manufacturing facilities up to their maximum operating capacity: *Provided,* That any utility may request the War Production Board to direct the operation of specific consumer stand-by facilities (in addition to those provided above) prior to the operation of such utility's stand-by manufacturing facilities, upon the ground that such action would relieve the gas shortage more expeditiously, or with less use of critical fuels, or would otherwise be in the interest of the war effort.

(iii) Third, reduce deliveries without regard to the supplier's contractual rights or those of any consumer to all remaining consumers having stand-by facilities, to the extent of the capacity of stand-by facilities.

(iv) Fourth, if such action has not previously been taken, notify all domestic and other consumers by radio, newspaper, or any other available means of general communication, that a temporary gas emergency in the area exists or is imminent and appeal for the immediate institution of voluntary curtailment by all gas consumers, to be maintained until notification that the emergency has passed.

(v) Fifth, interrupt deliveries within the limits of contractual rights to any consumers purchasing gas under contracts permitting the supplier to interrupt deliveries, who have not been fully curtailed under previous steps: *Provided,* That deliveries shall be maintained to consumers listed on Exhibit A to the extent necessary to prevent interference with production or essential operations.

(vi) Sixth, reduce deliveries to all consumers not fully curtailed under previous steps, without regard to the supplier's contractual rights or those of any consumer or the non-existence of stand-by facilities: *Provided,* That deliveries shall be maintained to consumers listed on Exhibit A to the extent necessary to prevent interference with production or essential operations.

(vii) Seventh, reduce deliveries to any consumers listed in Exhibit A to the extent that operations of such consumers have been determined by the War Production Board to be of such nature as to permit reductions in delivery of gas without permanent loss in production of critical end products or essential services.

(viii) Eighth, if further reductions in deliveries are necessary, curtail all remaining consumers on a uniform proportionate basis so far as practicable pending receipt of special directions from the War Production Board.

(2) A "gas shortage" shall be deemed to exist whenever (i) a utility or non-utility supplier finds it necessary to reduce deliveries to its consumers, or (ii) the utility or non-utility supplier is able to maintain full deliveries to all consumers only by excessive withdrawals from storage or reserves which impair its ability to meet its forthcoming peak-day requirements to the usual extent, or (iii) the War Production Board notifies a utility or non-utility supplier that it considers a shortage to exist on such system.

(3) Deliveries to domestic consumers during gas shortages shall be made pursuant to such directions as the War Production Board may from time to time issue: *Provided,* That any utility may at any time submit to the War Production Board a practicable program for the curtailment of its domestic consumers during such gas shortages and request that it be declared operative by the War Production Board among consumers of such utility.

(4) Except as set forth in the proviso of the first paragraph of paragraph (c) (1), or pursuant to special directions of the War Production Board, deliveries to any consumer in the respective groups defined above in paragraphs (c) (1) (i) to (c) (1) (vii) inclusive, shall not be reduced until deliveries to all consumers in prior groups have been fully suspended in accordance with the specific provisions of such paragraph: *Provided,* That deliveries to consumers in any group who consume less than 3000 mcf of gas per month need not be suspended before commencing curtailment of successive groups where such consumers are scattered or for other reasons not susceptible of speedy curtailment. Reductions to consumers defined in paragraph (c) (1) (i) shall be on such basis as will relieve the shortage most expeditiously; reduction to consumers within all groups defined in paragraph (c) (1) (iii) to (c) (1) (vii) inclusive shall so far as practicable be made on a uniform proportionate basis: *Provided,* That any utility or non-utility supplier may request the War Production Board to

The Bob White ELECTRONIC BOX LOCATOR

Gives rapid location of curb and street boxes, drip boxes, risers, manhole lids and cleanouts.
This locator consists of a loop aerial, enclosed in a wooden disc, amplifier and earphone.
When the edge of the loop aerial in the disc passes over a covered box or riser, the earphone indicates its location with a "bob-white" call.

Its operation is not affected by snow or ice, small pieces of metal, low hanging wires, electrical fields, radios or passing autos. Any man can easily operate it.

Complete operating details, effective depths in operation and other features sent on request.

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approve a specific program for such interruptions within any class of consumers, on a geographic or other basis which will relieve gas shortages more expeditiously.

(5) Each utility or non-utility supplier shall classify each of its industrial and commercial consumers within the applicable grouping in the schedule set forth in paragraph (c) (1) and upon specific request of the War Production Board shall, on or before November 15th of each year forward such consumer classification lists to the War Production Board on Form WPB-619, together with the other data relative to operations during shortages required by such form. Unless modified or revised by direction of the War Production Board, such consumer classification lists submitted on Form WPB-619 shall determine the grouping of each consumer in the application of the curtailment schedule set forth in paragraph (c) (1). At the direction of the War Production Board specific consumers or classes of consumers may at any time be classified in any of the groups defined in paragraph (c) (1) (i) to (c) (1) (vii) inclusive, or in any special group, without regard to size, nature, or terms of delivery, whenever such action will assist in relieving gas shortage more expeditiously, or with less use of critical fuels, or in other respects will be in the interest of the war effort.

(6) Whenever, pursuant to any of the provisions of this order, or any special direction of the War Production Board, a utility or non-utility supplier is required to reduce deliveries to any consumer, it shall notify such consumer accordingly. Upon receipt of such notification each consumer shall reduce his acceptance of gas deliveries in accordance therewith.

(7) Notwithstanding any provisions of this order, if the War Production Board, after investigation, shall determine that any consumer having stand-by facilities, has failed to provide himself with an adequate supply of fuel for the operation of such stand-by facilities despite the availability of such fuel, the War Production Board may prohibit deliveries of gas to, and acceptances of gas by, such consumer to the extent that his requirements of gas could have been decreased through the operation of such stand-by facilities.

(8) The following reports shall be filed with the War Production Board relative to gas shortages:

(i) Whenever any utility or non-utility supplier reduces deliveries of gas to any consumer pursuant to paragraph (c) (1) (v) above or any subsequent sub-paragraph of (c) (1), such utility or non-utility supplier shall immediately notify the War Production Board, Office of War Utilities, Natural Gas Division, Ref.: U-7, by telegram, of the extent of such reduction.

(ii) On or before the 15th day of each month following a calendar month during which reductions in deliveries have occurred, each affected utility or non-utility supplier shall submit a report on Form WPB-620 of the aggregate volumes of natural gas conserved by such reductions in delivery and the volumes of natural gas replaced by consumer stand-by facilities and by utility or non-utility supplier gas manufacturing stand-by facilities.

(iii) On or before the 15th day of each month, each utility or non-utility supplier in certain areas specifically designated by the War Production Board shall submit on Form WPB-2077 a report of natural gas underground storage operations, summarizing such operations for the calendar month preceding the date of reporting.

(d) *Restrictions on deliveries of natural gas to non-residential consumers.* (1) No utility or non-utility supplier shall deliver natural gas to any non-residential consumer for the operation of any gas-fired equipment (including space heating equipment) and no non-residential consumer shall accept such deliveries, unless:

(i) Such equipment was installed and in regular operation at the same premises prior to November 30, 1942: *Provided,* Deliveries of natural gas for the operation thereof were not prohibited prior to that date by Limitation Order L-31, or

(ii) If such equipment was converted from some other fuel to natural gas, such conversion was completed and the equipment was in regular operation at the same premises prior to November 30, 1942: *Provided,* That deliveries of natural gas for the operation thereof were not prohibited prior to that date by Limitation Order L-31, or

(iii) Such equipment replaces gas-fired equipment of equal or greater capacity previously installed and regularly operated at the same premises for the same purposes: *Pro-*

REED'S 4 WHEEL Razor Blade Pipe Cutters

IDEAL FOR ANY TRENCH OR OTHER CLOSE QUARTER JOBS

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Capacity ½" to 2"

Weight 5 lbs.

The REED FOUR WHEEL Cutter operates with a short back and forth motion through only one-third of a circle. Each of the four wheels exerts the same pressure on the pipe, and all 4 therefore cut evenly and completely through the pipe at the same time.

Equipped with Reed special alloy RAZOR BLADE Wheels, which cut with remarkable ease, leave little burr, and have a long life of useful service.

A sample cutter for test and trial may be ordered on memorandum invoice, to be paid for if retained or returned for credit if unsatisfactory. Try it once, and you will use no other.

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vided, That non-space heating equipment is not replaced with space heating equipment, or

(iv) Such deliveries have been specifically approved by the War Production Board: *Provided,* That deliveries of natural gas may be made where necessary for the operation of oil well or gas well drilling equipment.

(2) The War Production Board may, by specific direction, establish monthly delivery quotas, limit increases in or require decreases of the monthly volume of natural gas which may be delivered to or accepted by any non-residential consumer in certain gas shortage areas, whenever it is determined that such action is necessary or appropriate; and upon the issuance of such directions no person shall make or accept deliveries which are not in conformance therewith.

(e) *Restrictions on deliveries of natural gas to residential consumers.* No utility or non-utility supplier shall deliver to any residential consumer, and no residential consumer shall accept delivery of natural gas for the operation of any space heating equipment in any area listed in Exhibit B unless:

(1) Such equipment was installed and in regular operation at the same premises prior to December 2, 1942: *Provided,* That deliveries of natural gas for the operation of such equipment were not prohibited prior to the same date by Limitation Order L-31; or

(2) If such equipment was converted from some other fuel to natural gas, such conversion was completed and the equipment was in regular operation at the same premises prior to December 2, 1942: *Provided,* That deliveries of natural gas for the operation of such equipment were not prohibited prior to the same date by Limitation Order L-31, or

(3) In the case of new construction in any area listed in Exhibit B, such equipment was specified in the construction contract and was installed prior to March 1, 1943: *Provided,* That deliveries of natural gas for the operation thereof were not prohibited prior to that date by Limitation Order L-31, or

(4) Such equipment replaces gas-fired equipment of equal or greater input capacity installed and regularly operated at the same premises, whether by the same or another consumer, or

(5) Such deliveries have been specifically approved by the War Production Board: *Provided,* That deliveries of natural gas may be made to residential consumers in those areas not listed in Exhibit B of this order, as the same may be from time to time amended, for the operation of space heating equipment.

(f) *Conversions and prohibited installations.* (1) No person shall install or cause to be installed gas-fired equipment designed to receive deliveries of natural gas from any utility if such deliveries are prohibited by paragraphs (d) or (e) of this order.

(2) If the War Production Board, after investigation, shall determine:

(i) That the gas-fired equipment owned or operated by any person can, without exceptional expense or hardship to such person, be converted to the use of, or be replaced by equipment using, a less critical fuel of which a supply is available, and

(ii) That such conversion or replacement will contribute to the alleviation of actual or prospective gas shortages, or to the maintenance of gas deliveries to war producers or essential civilian services, the War Production Board may upon sufficient notice to permit such conversion or replacement, prohibit further deliveries or acceptances of natural gas for the operation of such gas-fired equipment.

(g) *Conservation for war needs.* When the War Production Board by special direction prohibits or limits the use of natural gas for specific purposes in order to safeguard essential gas supplies in the interest of the war effort, no person shall use, deliver, or accept natural gas in violation of restrictions thus established.

(h) *Appeals and applications.* (1) Any person affected by this order, or any direction issued thereunder, who considers that compliance therewith or the operation thereof would work an exceptional and unreasonable hardship, or would in other respects be prejudicial, may appeal for relief by letter to the War Production Board.

(2) Any person who considers that any reduction in or prohibition of deliveries of natural gas made, or proposed to be made pursuant to any provision of this order, or any direction issued thereunder, interferes or will interfere materially with war production or essential civilian service, may apply to the War Production Board for relief by letter communication setting forth all relevant details. Any utility or non-utility supplier which considers that the supply of natural gas available on its system is sufficient to provide for all existing and estimated future requirements of war industry and unrestricted civilian use, may apply for exemption of its system, or any portion thereof, from the provisions of paragraph (d) or (e) of this order.

(3) Applications by consumers for exemption from any of the restrictions on deliveries of natural gas contained in paragraphs (d) and (e) of this order shall be made on Form WPB-3314.

(i) *Reports and information.* (1) Each utility and non-utility supplier shall keep and preserve for not less than two years accurate and complete records concerning deliveries of natural gas to consumers or to other utilities or non-utility suppliers. Such records shall be subject to inspection by duly authorized representatives of the War Production Board.

(2) All persons affected by this order shall execute and file with the War Production Board such reports and questionnaires as said Board shall from time to time request.

(j) *Communications to War Production Board.* All reports required to be filed hereunder, and all communications concerning this order shall, unless otherwise directed, be addressed to: War Production Board, Office of War Utilities, Washington 25, D. C. Ref.: U-7.

(k) *Violations.* Any person who wilfully violates any provision of this order or any direction issued hereunder, or who, in connection with such order or direction wilfully conceals a material fact or furnishes false information to any department or agency of the United States, is guilty of a crime, and upon conviction may be punished by fine or imprisonment. In addition, any such person may be prohibited from making or obtaining further deliveries of, or from processing or using material under priority control and may be deprived of priorities assistance.

NOTE: *The reporting requirements of this order have been approved by the Bureau of the Budget, pursuant to the Federal Reports Act of 1942.*

Issued this 25th day of October 1943.

WAR PRODUCTION BOARD.
By J. JOSEPH WHELAN,
Recording Secretary.

Independent Petroleum Assn. Discusses Oil Production

A highlight of the Fourteenth Annual Meeting of the Independent Petroleum Association of America in Fort Worth, Texas, October 24-27, was a Governors' luncheon on October 27, at which Governor Coke R. Stevenson of Texas was host to several Governors from oil producing states in the Mid-Continent area who were called upon for brief talks on the oil business as they viewed it.

New Equipment and Appliances

"Bob White" Locator for Buried Boxes

A new precision instrument for accurate and speedy spotting of buried curb, street and drip boxes, risers, cleanouts, etc., has been introduced by Ferguson & Pascoe, 11 Hill Street, Newark-2, N. J.

Bob White Box Locator

This locator consists of a loop aerial, amplifier and earphone.

As shown in the illustration an operator, as he walks along swings the disc carrying the aerial a short distance above ground or paving. When encountering the object sought, the amplifier, in a closed case, carried from the shoulder, sends a "bob white" signal to the ear phone and enables the exact center for digging to be located.

Complete description with operating instructions are available through the manufacturers.

Gas Cleaning and Washing

This Stationary Disintegrator is designed for gas washing and cleaning operations in tar scrubbers, ammonia washers and in liquid purification. It provides intimacy of contact not heretofore available.

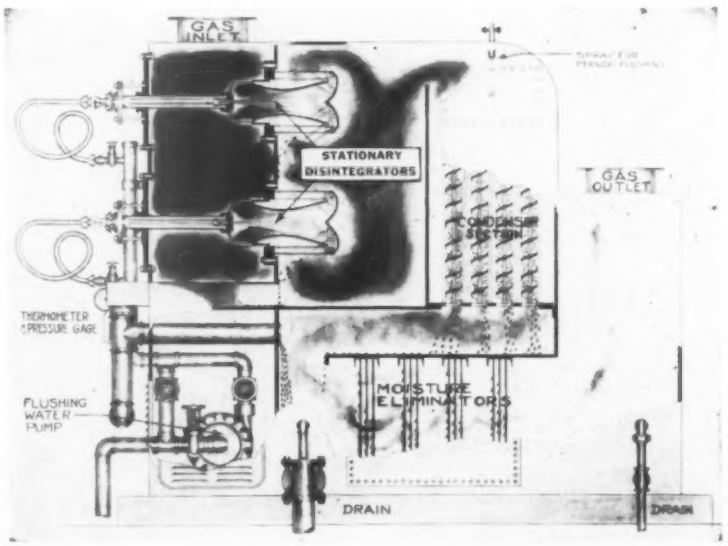
Among its advantages are, small amount of space required. For example, a scrubber having a capacity of ten million cubic feet per day requires a space 8 ft. wide by 16 ft. long and 12 ft. in height. It has no moving parts.

High efficiency. Tar scrubbers now in operation are reducing the tar to one grain per hundred cubic feet or less.

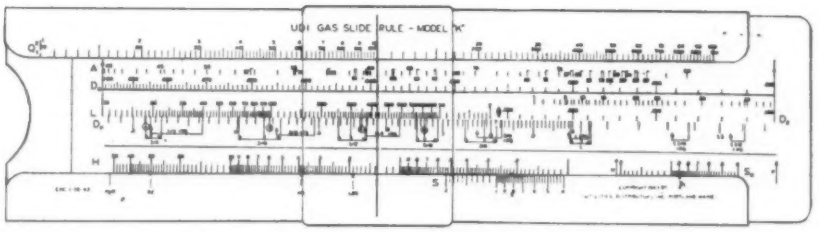
Low installation and operating cost. Operating experience has demonstrated that a substantial amount of the hydrogen sulphide in the gas is removed by the wash water in the tar scrubber.

The life of the oxide in the purifying boxes is increased due to the lesser amount of hydrogen sulphide in the gas. Furthermore, the cleanliness of the gas materially reduces the amount of tar deposit in oxide boxes and thus eliminates channeling.

Fuller information will be found in bulletin issued by Coal Carbonizing Company, St. Louis, Mo., or 420 Lexington Ave., New York 17.



Stationary Disintegrator for Gas Cleaning and Washing.



U.D.I. Gas Slide Rule, Model K.

Gas Slide Rule

This rule designated as the Model K UDI gas slide rule is designed to calculate orifice capacities for any type of gas in cubic feet or Btu. per hour at pressures ranging from 0.1 inches to 50 lbs. It may be read in pressure units of inches water column, ounces, inches of mercury or pounds. Also to calculate pressure drop in pipe lines, meters, control valves, etc., for low pressure applications and pressure drop for high pressure applications.

Made of celluloid with two movable slides. Size 7⅞" x 2⅛". Leather case and instruction manual are included.

A larger model 12½" long made of seasoned mahogany and covered with celluloid is also available.

For fuller information write Utilities Distributors, Inc., Box 1937, Portland, Maine.

News of the Gas Industry

Industrial Gas Men Active at National Metal Congress

In lieu of the traditional Industrial Gas Breakfast this year at the National Metal Congress in Chicago industrial gas men from all parts gathered for an important meeting on October 19th, which covered many subjects that apply to gas in the production and heat treating of metals. Billed as The Industrial Gas Round Table, the gathering soon took on the aspects of a town meeting as the crowd filled the room in the Palmer House to overflowing.

Under the skillful guidance of Carl H. Lekberg, Northern Indiana Public Service Company, whose vigorous gavel-wielding technique finally broke the gavel in two, experts in industrial gas utilization presented to the members of the Industrial and Commercial Gas Section data and information on many of today's war production heat treating problems and projected technical subjects and sales plans into the days when war production will give way to peace-time manufacturing.

Ben H. Gardner, Columbia Engineering Corporation, Columbus, Ohio, and Chairman of the Industrial and Commercial Gas Section, welcomed the industrial gas men and their guests from the National Metal Congress. Mr. Gardner said "Those of us who are associated with the Industrial and Commercial Gas Section of the American Gas Association, both manufacturer representatives and utility representatives, take a great, and we think a pardonable, pride in the part we have had in equipping our nation for its greatest industrial effort—an effort on which its very life has depended. We feel that the manufacturers of gas fired industrial equipment and the industrial sales engineers of the gas industry have given to our great munition producers a service that has been of tremendous help and has assisted in the making of our national record—a record of an enormous output of the tools of war. When this war is finally over, we will surely face a most interesting period of reconstruction, a period in which there are bound to be great developments in the use of new metals and alloys, and some very revolutionary changes in methods of heat treating. I feel sure that in this coming period which we are facing, our gas fuel will continue to hold its own as the preferred fuel, and that the industrial sales engineers of our gas equipment manufacturers and of our gas utilities will continue to make their full contribution to the solution of future problems and to the continued preeminence of American industry."

Technical subjects discussed covered the whole range from the tremendous open hearth furnaces discussed by the Chairman of the A.G.A. Metals Treating and Melting Group, John P. Brosius, Equitable Gas Company, Pittsburgh, to a tiny radiant tube the size of a lead pencil, described by Nelson R. Gorsuch, Citizens Gas & Coke Utility, Indianapolis, Indiana.

Two panels, the membership of which represented real leadership in industrial gas, were held. One was composed of gas utility men, their subject being "Post War Problems Industrial Gas Will Face" and the other was composed of leading manufacturers of gas heat treating equipment whose subject was "As Manufacturers See Industrial Gas Equipment of the Future." Nine men took part in these panels, each making an initial five-minute presentation and later taking part in a lively, open question and answer period conducted by Chairman Lekberg. The participants were: Al Schuetz, Milwaukee Gas Light Co.; "Boney" Gorsuch, Citizens Gas & Coke Utility, Indianapolis, Indiana; Lloyd French, Union Gas Co. of Canada, Ltd., Chatham, Ontario; "Larry" Foote, Central Illinois Electric & Gas Co., Rockford, Ill.; W. A. Darrow, Continental Industrial Engineers, Inc., Chicago, Ill.; Harry W. Smith, Jr., the Selas Co., Philadelphia, Pa.; Henry M. Heyn, Surface Combustion, Toledo, Ohio; Ed. McLean, National Machine Works, Chicago, Ill.; Slade Gamble, Lindberg Engineering Co., Chicago, Ill.

R. M. Newhall Granted M.S. Degree at Illinois Tech.

Robert M. Newhall, Stoneham, Mass., has become the first student to complete training for an advanced degree at the Institute of Gas Technology at Illinois Institute of Technology, Chicago.

Newhall has just completed two years of graduate work in gas technology and was granted a Master of Science degree from Illinois Tech. at its commencement Oct. 17.

He is one of 24 students, all of them outstanding chemistry or chemical engineering graduates, who have been granted fellowships for study at the Gas Institute during the past two years.

Under the educational plan of the Gas Institute, about 15 students are selected each year from the nation's colleges to receive the training. All are granted fellowships, and no other students can take the work. Each of the fellows receives an annual stipend to cover expenses while studying at the Gas Institute. During the summer they are employed in the gas industry as a part of the curriculum. The fellows also assist in war research projects at the Gas Institute during their training period.

CP Range Campaign for 1944

Plans for increased promotion of Certified Performance Gas Ranges in 1944 to assist dealers and gas utilities build post war business were announced by Lloyd C. Ginn, Chairman of the CP Sales Management Committee of the Association of Gas Appliance and Equipment Manufacturers at the American Gas Association annual convention in St. Louis. The 1944 Program will include trade paper promotion, a nation-wide newspaper campaign, direct mail and point of sale material aimed to assist dealers and gas utilities obtain advance orders for post war deliveries.

Results of the 1943 program were gratifying, Mr. Ginn reported. Mats supplied to dealers and gas utilities appeared in more than 889 newspapers in thirty-eight states with an estimated total circulation of twenty million.

Unique in the home appliance field, gas ranges carrying the CP seal, are made to meet uniform high cooking performance standards set by Home Service Directors and engineers of gas range manufacturers and the American Gas Association. Specifications for post war CP gas ranges were discussed by the CP manufacturers in St. Louis.

Manufacturers of CP ranges are: A-B Stoves, Inc., American Stove Co., Clare Bros. & Co., Ltd., The Cleveland Cooperative Stove Co., Cribben & Sexton Co., Detroit-Michigan Stove Co., The Estate Stove Co., Glenwood Range Co., James Graham Mfg. Co., Hardwick Stove Co., Moffats, Ltd., O'Keefe & Merritt Co., Geo. D. Roper Corp., Standard Gas Equipment Corp., Tappan Stove Co.

Important Post for E. Holley Poe

Secretary of the Interior Harold L. Ickes, president of the Petroleum Reserves Corporation, announced October 14 the appointment of E. Holley Poe as Executive Officer and General Manager of the Corporation. Mr. Poe resigned as Director of the Natural Gas and Natural Gasoline Division of the Petroleum Administration for War to accept this appointment.

Mr. Poe is a native of Oklahoma, and has been connected with the oil and gas business for twenty-five years. He has been associated with the Tidal Oil Company (now Tidewater Oil Company), the Tiger Mountain Oil Company, the Central States Power and Light Company, and, from 1937, he was an executive of the Natural Gas Section of the American Gas Association. He has been with the Petroleum Administration for War since June, 1942.

Watson E. Derwent, vice president of the Geo. D. Roper Corporation, Rockford, Illinois, has announced his retirement effective November 1, 1943. A prominent figure in the Roper organization for 28 years, Derwent leaves behind a group of associates with whom he has worked during that period. Left to right, standing, secretary-treasurer, Floyd K. Lawson, 26 years with the company; vice president, E. Carl Sorby, 16 years; vice president, John P. Curtin, 32 years; and president, Stanley H. Hobson, 32 years.

Derwent Retires from Geo. D. Roper Corporation

Watson E. Derwent, vice president of the Geo. D. Roper Corporation, Rockford, Illinois, who has been with Roper for 28 years and an active figure in the gas industry for over 40 years, announced his retirement effective November 1, 1943.

It was as a young man in 1915 that "Wat" Derwent became associated with the Roper organization. Starting as assistant to the vice president, he performed a wide range of duties.

In commenting on those early years Derwent said, "A man really had to be versatile then. For example, at the start George D. Roper, our founder and president, went out and got orders for stoves, came home and helped build them and had a hand in everything else such as advertising, billing, etc. At one time I was working on production, sales, advertising and most everything else."

In 1917 Derwent became sales manager of the gas range division and in 1918 was elevated to the position of vice president.

Previous to joining the Roper organization he served for 11 years as sales manager of the Kalamazoo Stove Company, Kalamazoo, Michigan.

Always an aggressive, forceful character, Derwent was prominent in association activities for years. He was a member of every state gas association and a member of the American Gas Association for 25 years, serving on many industry committees. He helped organize the Association of Gas Appliance and Equipment Manufacturers and served as president for two years. He has just completed a term as chairman of the board of directors of the American Gas Association. Derwent has served on the A. G. A. Standards committee from the time the laboratory was set up.

Since the start of the war much of his time has been devoted to coordinating activities of the gas industry with the wartime requirements of various governmental agencies.

Talking about his retirement, Derwent said, "The Geo. D. Roper Corporation is in excellent condition. Our officers and the men surrounding them are well-schooled in problems of the company and the industry. They are capable of carrying on in a very energetic manner. I want to step aside now while I still have a few years to enjoy doing some of those things I've been putting off all my life."

Mathieson Alkali Works Wins White Star

In recognition of its continued contributions to the war effort, the Niagara Falls plant of the Mathieson Alkali Works, Inc., has been authorized to add a white star to its "E" flag.

"The Blue Flame"

October marked the appearance of the first issue of "The Blue Flame" published by Portland (Ore.) Gas and Coke Company.

Its function is that of aiding in the maintenance of employee relations, and is largely devoted to personal activities of employees including items on those in the armed forces. John Dierdorff is editor and Don Johnson managing editor.

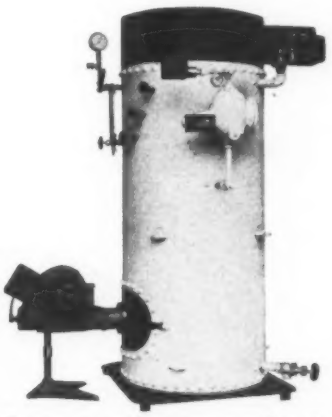
Copies are being distributed to all employees as well as those now in military service.

Service Booklet for Range Dealers

Titled "Keeping Your Gas Range on a War Basis," The Estate Stove Company, Hamilton, Ohio, has issued a small but informative booklet on gas range use and maintenance for distribution through their established dealers.

Care of top burners, improved mealtime production, pointers on food values, care of the range and cooking hints are briefly set forth but in a comprehensive manner.

LATTNER
GAS — OIL BOILER
3 HP to 35 HP.



Burns natural gas or regular furnace oils with equal efficiency using same burner.

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GOODMAN
USED SINCE 1897
2" HANDLE & LOCKING SLEEVE
GAS MAIN STOPPER

The Reliable Shut-Off for Street Mains

THE GOODMAN STOPPER

Now has the "Z" handle for easy manipulation. When locked in place it holds. Stopper cannot slip. Gas cannot pass. Adjusted in 30 seconds.

Ask for circulars on this and other distribution equipment.

Nearly a half century of service to the Gas Industry.

Safety Gas Main Stopper Co.
523 Atlantic Avenue, Brooklyn, New York

Valve Situation Eases

There is evidence that manufacturers of products for essential wartime industries are getting "over the hump" and that orders for less critical needs now have a good chance for delivery within a reasonable time.

According to an announcement just released by Merco Nordstrom Valve Company, available manufacturing facilities not suitable for the production of critical steel valves are being devoted to semi-steel valves. This will permit immediate stock deliveries of certain sizes and figure numbers, thus relieving an aggravating condition in many industries.

In the near future, the manufacturer states, orders will be largely completed for top priority Nordstrom Cast Steel Valves desperately needed in synthetic rubber plants and high octane refineries which in turn gives excellent prospect of delivery within ninety days of steel valves for other uses.

Critical war orders necessitated a 600 percent increase of valve tonnage over normal plant capacity for a short period, according to Colonel Willard F. Rockwell, who is President of the Company. This enormous load has been reduced by special efforts and the time when deliveries can be resumed for other needs on a greatly expanded basis are now in sight.

The entire valve industry is emerging from a very trying period, much to the relief of many valve users. Instead of waiting until the post-war period, valve purchasers may be able to obtain essential valves now. Easing of the valve situation may be forerunner of solutions for many other manufacturing problems. Certainly this is glad news for the petroleum industry in particular.

Harry A. Erb With Worthington

Worthington Pump and Machinery Corporation announces that Harry A. Erb has joined the organization as Service

Harry A. Erb

Manager of the Moore Steam Turbine Division, Wellsville, New York. A 1928 graduate of Cornell University, his experience covers the servicing of steam turbines, electric generators and all related equipment.

American Meter Employee Welfare Plan Cited

The current bulletin of The Equitable Life Assurance Society features the progressive employee insurance plan of American Meter Company, which stands out as an example of good employee welfare policies of the gas industry as a whole. Quoting from the insurance company's bulletin:

"The concept of Group protection as an outstanding community welfare service ranks high in American Meter Company, Inc., so far as is known, the first organization in the entire country to provide every form of Group insurance available to employees and their dependents.

"A pioneer in industry established in 1836, American Meter has also been an early leader in employee welfare plans. The company adopted Equitable Group Life insurance on the non-contributory basis on February 1, 1917.

"Subsequently the company's employees received the benefits of contributory Group Life insurance, Accident and Health, Accidental Death and Dismemberment insurance, Hospital Expense insurance, Surgical Benefits, and Group Annuities. The Group program was made complete by the addition of Hospital Expense insurance and Surgical Benefits for dependents on January 1, 1940. Recently the program was improved by increasing amounts under dependent coverages to equal those provided for employees."

Summing up the employee welfare plans of that company, Norton McKean, President of American Meter Company, states:

"Records reveal that few of our deceased employees had made adequate provision for their families through individual life insurance. It is believed that an extremely small percentage of our active employees have any individual protection against disability or, except for our Group program, have provided in substantial manner against old-age dependency. The money we spend for Group protection is, therefore, easily the best community welfare work we do."

R. G. Barnett Chosen to Post on A. G. A. Advertising Committee

Gas companies participating in the gas industry's national advertising program and located in Washington, Oregon, Nevada, Idaho and Montana have chosen R. G. Barnett of Portland, Oregon, to represent them on the American Gas Association's Committee on National Advertising.

Mr. Barnett is vice-president and general manager of the Portland Gas & Coke Company and replaces James F. Pollard of Seattle who has resigned his position as president of the Seattle Gas Company effective November 1st, and who intends to take up residence in California.

Kirk Joins Navy As Lieutenant Junior Grade

Walter B. Kirk, Assistant Chief Research Engineer of the American Gas Association Testing Laboratories, has been commissioned a Lieutenant, Junior Grade in the U. S. Navy. Volunteering for special duty, he reported to Princeton University on September 15, 1943, for basic training and indoctrination following which he is slated for sea duty as deck officer on one of our fighting "Small Craft." His numerous friends, both in the gas industry at large and in the Laboratories, find it just like "Walt" to volunteer for duty where the going is tough.

BESSE, OSBORN & ODELL INC. COLONIAL BRAND BOSTON, U.S.A. RE-CHROME METER LEATHER

OUR LEATHERS will stand up in the meter under all variable conditions. Unaffected by heat, cold or dampness. The test of time has proven their superiority over any substitutes proposed or offered for diaphragm use; they are strong and pliable.

We also manufacture Oiled Meter Leather as well as Re-Chrome for Iron and Tin Meters, Governors and Regulators.

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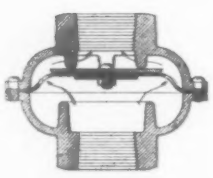
Prompt Deliveries From Our Own Factory



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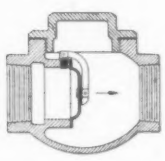

NORWALK VALVE COMPANY
85 Spring St. South Norwalk, Conn.

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GAS HOLDER INSPECTION SERVICE

Cincinnati — Ohio

91

STACEY SINCE 1851

Years

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912, of American Gas Journal, published monthly at East Stroudsburg, Pa., for October, 1943.

State of New York }
County of New York } ss.

Before me, a Notary Public in and for the State and county aforesaid, personally appeared S. G. Krake, who, having been duly sworn according to law, deposes and says that he is the Manager of the American Gas Journal and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 411, Postal Laws and Regulations.

1. That the names and addresses of the publisher, editor, managing editor and business managers are: Publisher, American Gas Journal, Inc., 53 Park Place, New York City; Editor, Alfred I. Phillips, 53 Park Place, New York City; Business Manager, H. T. Matthew, 53 Park Place, New York City.

2. That the owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a firm, company, or other unincorporated concern, its name and address, as well as those of each individual member, must be given.) S. G. Krake, 53 Park Place, New York City.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.) None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company, but also in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom said trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

5. That the average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the six months preceding the date shown above is ——. (This information is required from daily publications only.)

S. G. KRAKE.
Manager.

Sworn to and subscribed before me this 1st day of October, 1943.

(Seal.) MARY E. KELLEHER.
(My commission expires March 30, 1944.)

Quigley Company Moves to Enlarged Quarters

Quigley Company, Inc., manufacturers of refractories and other industrial products, announces the removal of their general offices to 527 Fifth Avenue, New York 17, N. Y.

Factories are located at South River, N. J., Old Bridge, N. J., and Lachine, P. Q., Canada. Branch offices and warehouses are in Chicago, Philadelphia and Pawtucket, R. I.

Synthetic Rubber Sponge

Manufacture of a general purpose synthetic rubber sponge is announced by The B. F. Goodrich Company. It is made in three densities, soft, medium and firm grades. Each has good oil resisting properties, and can be made into slabs, cord, tubing, or in almost any other molded shape. The grades correspond pretty well with the pre-war crude rubber sponge.

Slabs 24″ by 120″ can be made in thicknesses of 1/8, 3/16, 1/4, 3/8 and 1/2 inch and 24″ by 60″ slabs in the 3/4 and one inch thicknesses.

Small Water Gas Machines

(Continued from page 34)

heat value combustion gases and prevent contamination of the blue gas.

If it is the policy to save the blue gas at the end of the run by a blast purge this should not be overdone and blast gases sent to the relief holder.

Increasing the air/steam ratio will improve the quality of the blue gas by reason of increased fuel bed temperatures and better steam decomposition.

Short cycles, by maintaining more uniform fuel bed temperatures, also tend to improve the quality of the blue gas.

Higher percentages of up steam, by increasing temperatures in the upper part of the fire, give better steam decomposition and improve blue gas quality. The danger of weak fires developing becomes greater, however, and should be watched for, if this practice is used to improve blue gas.

It goes without saying that any plant that is making any pretense of efficient operation, must keep records of the results obtained, so that when trouble develops comparisons can be made and trouble may be more easily located.

It is suggested that data be kept on the following on a daily basis.

When such data are available they

Gas Made (Total	**Gas Made per Run**	**Gas Made per Hour**
Pounds of Generator Fuel per MCF	**Gallons of Gas Oil per MCF**	**Btu of Gas**
Pounds of Steam per MCF	**Cubic Feet of Generator Air per MCF**	**Air/Steam Ratio**
Generator Air Blasting Rate	**Steam Rates**	**Percent of Down Steam**
Cycle in Use Oil per Run	**Oil Input Rate**	**Superheater Temperature**
Btu Recovered per Gallon of Oil Used	**Terzian Factor**	

are of great assistance in locating causes of lowered efficiencies when they occur.

It is impossible to set up any standards for pounds of generator fuel and gallons of oil per MCF. This will depend on a number of factors including: Type and size of fuel, design of set, length of standby periods, practice in cleaning fire, operating practices and a number of others.

Figures of the average and usual performance, that are considered good, have already been given for air per MCF—steam per MCF—air/steam ratio—per cent of down steam and gas per run. Oil per MCF will vary with the Btu of the gas produced and the oil efficiency obtained. With a 525 Btu gas it will vary from 2.6 to 3.2 gallons, with good oil and efficient cracking. Generator fuel per MCF will also vary with the Btu of the gas. For a 525 Btu gas it should be between 28 and 33 pounds in a small plant. The length of standby period has an effect on the generator fuel per MCF, and should be considered. Short daily hours of running usually increase the amount of fuel required.

To make one MCF of blue gas (theoretical 50% hydrogen and 50% carbon monoxide) requires 15.8 pounds of carbon, exclusive of that used for heating the apparatus and supplying the losses. This would account for 17½ to 18½ pounds of coke.

Since the amount of blue gas in the make gas will be determined by the amount of oil gas, which is in turn determined by the Btu of the gas and the Btu of the oil gas; about 800 cubic feet of blue gas will be present for each MCF of make gas when the standard is 525 Btu.

Thus not over fourteen or fifteen pounds of coke will be used as raw material for the blue gas reaction. Generator fuel used in excess of this is used in supplying the heat necessary for the chemical reactions to make the gas, and the losses, both avoidable and unavoidable. Such losses are:

Heat carried from the set in the blast and make gases.
Heat in the tar formed.
Heat carried away by undecomposed steam.
Heat carried away by moisture in the generator fuel and blast air.
Heat carried away by moisture formed in the combustion of hydrogen.
Heat lost by radiation from the shells during running period.
Heat lost by radiation from the shells during standby periods.
Unburned fuel contained in the generator ash.
A few other minor miscellaneous losses.

The heat of combustion in the tar is not lost to the plant but is to the gas. All other escape of heat, as mentioned, is lost, and good efficiency simply consists of keeping these losses to a minimum. Generator fuel is the source of practically all of the heat used in the process and heat losses affect generator fuel performance.

The Btu recovered per gallon of oil may be calculated with reasonable accuracy by the following formula

$$\text{M. Btu per gal. equals } \frac{\text{B-300}}{\text{A}} \text{ (plus 21)}$$

where B is the Btu per cubic foot of the gas made and A is the gallons of oil per MCF. The result is in thousands of Btu per gallon of oil. One hundred thousand (100,000) Btu per gallon or better, is considered good.

The Terzian Factor is an index of performance for the combined generator fuel and oil results. It is based on the assumption that we will get about ten times the Btu in the gas, from a gallon of oil as will be obtained from a pound of generator fuel. The formula follows:

$$\text{Terzian Factor equals } \frac{\text{10xC plus 100xA}}{\text{B}}$$

where A and B are as above and C equals the pounds of generator fuel per MCF. The result should equal one (1) or more and the smaller the numerical value, the better the operating results.

Storage of Coal

The Bureau of Mines has prepared a report on proper methods of coal storage. This report, written by J. F. Barkley, chief of the Bureau's Division of Solid Fuels Utilization for War, is designed primarily for industrial users who were urged to store coal in larger quantities during the hot-weather months that the mines might be kept at maximum production for the entire year.

Methods for storing coal in open pits and piles, and in bins, bunkers, and silos are discussed in detail, together with procedures for capping coal piles with airtight coverings, and the report compares the relative advantages and disadvantages of each. Suggestions for avoiding fires from spontaneous heating or oxidation of the coal, one of the major problems in industrial storage, include removing foreign materials from the coal, spreading and compacting the coal in layers, and avoiding segregations of sizes, external sources of heat, storing different coals together, and piling new coal on old.

A copy of Information Circular 7235, "The Storage of Coal," may be obtained by writing to the Bureau of Mines, Department of the Interior, Washington 25, D. C.

Recording Pressure Gauges. Bulletin 573 of The Bristol Company, Waterbury, Conn., describes and illustrates Model 22 M. having a variety of ranges from 2" of water to 12,000 lbs. sq. in. for use in distribution systems at strategic points. Records reveal low pressure spots, are a guide in plotting peak loads and determining main capacity in relation to demand.

HEAVY ARTILLERY FOR THE WAR PRODUCTION FRONT

READY ...TO SERVE YOUR NEEDS FOR NORDSTROM VALVES

We have made tremendous progress on our backlog of orders and within a few weeks, if not by the time this message appears, we will be largely in the clear on critical steel valves. We will then have open capacity to handle new steel valve business in the sequence received, subject, of course, to the priority rating assigned.

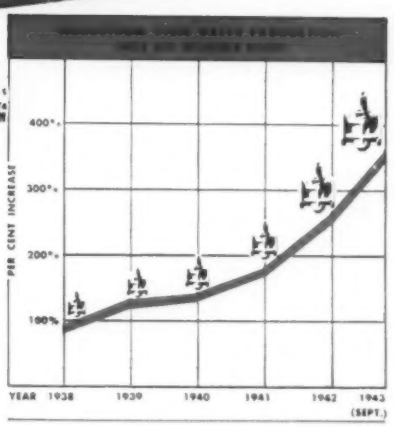
NEED VALVES AT ONCE? Right now we have available manufacturing facilities that are not suited to the production of steel valves and we can effect immediate stock delivery of Nordstrom Semi-Steel Valves in certain sizes and figure numbers.

AIM ...YOUR SIGHTS NOW ON LATE 1943 AND FIRST QUARTER 1944 CONSTRUCTION

Those booking orders now, in anticipation of late 1943 and early 1944 valve requirements will have first call on our facilities. Immediate action on your part is desirable so that we may establish firm delivery dates based upon amply foreseen needs for materials and carefully predicated manufacturing schedules.

FIRE ...YOUR INQUIRIES AND ORDERS AT US

We can handle your immediate business in many lines and orders for Nordstrom Valves of any type can be accepted with excellent prospect of delivery within a maximum of ninety days after receipt of firm specifications. The WPB lead factor for cast steel valves is 90 days.



Merco Nordstrom Valve Company, in common with the entire valve industry, is emerging from a very trying period. Earlier this year the need for valves in vital wartime industries greatly exceeded all available facilities. Nordstrom was ordered to produce 600% over normal capacity during a short period and then was confronted with shortages ranging from man-power and machine tools through storage facilities and materials. These handicaps, we are pleased to report, have now been largely eliminated—thanks to a realization on the part of the War Production Board of the indispensable and unique position occupied by Nordstrom Valves.

Our tonnage of cast steel Nordstrom Valves has shown a progressive increase month by month. Our plant capacity is now geared to a production rate never before attained in our history. We know of no other valve company that has had a greater load thrust upon it or has used more vigorous efforts to satisfy the demands of their customers.

Out of all this has come a stronger more integral Nordstrom organization—one capable of handling the immediate needs of today and with adequate post-war facilities to service an increasing circle of Nordstrom Valve users.

MERCO NORDSTROM VALVE COMPANY

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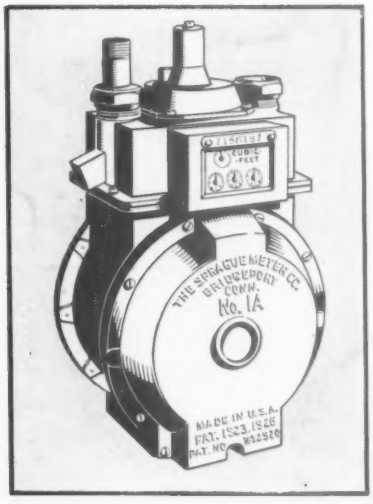
NORDSTROM VALVES KEEP UPKEEP DOWN

PRECISION IS HELPING TO WIN



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